Louisiana Wildlife and Fisheries Commission Meeting Minutes

February 04, 2016

The following constitute minutes of the
Louisiana Wildlife and Fisheries Commission Meeting
and are not verbatim transcripts of the proceedings.
Audio files of the meetings are kept at the
Louisiana Department of Wildlife and Fisheries
2000 Quail Drive
Baton Rouge, Louisiana 70808

For more information, call (225) 765-2806

AGENDA

1. Call to Order
2. Roll Call
3. Approval of Minutes from January 07, 2016 and November 05, 2016 Meeting
4. Commission Special Announcements / Personal Privilege
5. To hear Enforcement Reports January 2016
6. To hear a presentation on the Stock Assessment Report for Striped Mullet
7. To consider a Notice of Intent to modify Greater Amberjack commercial trip limits and recreational size limits
8. To hear a presentation on the recommendations of the Oyster Lease Moratorium Lifting Committee
9. To consider a Resolution confirming Louisiana's jurisdiction over Reef Fish Management between three and nine nautical miles, as recognized by the U.S. Congress, and clarifying gear restrictions, methods of take and licensing in these waters
10. To hear an update on comments regarding the 2015-2016 and 2016-2017 General and WMA Hunting Seasons and Rules and Regulations, 2017 General and WMA Turkey Hunting Season and Rules and Regulations, and 2016-2017 Migratory Birds Regulations, Seasons, and Bag Limits Notice of Intent and to Consider any amendments thereto
11. To hear an update on the Game and Fish Preserves' governing authorities contacts
12. Set June 2016 Meeting Date
13. Receive Public Comments
14. Adjournment

I. Call to Order

The regular meeting of the Louisiana Department of Wildlife and Fisheries Commission was called to order at 9:30 AM on February 04, 2016 in Baton Rouge, LA at the Louisiana Department of Wildlife and Fisheries Headquarters Building in the Louisiana Room by Vice Chairman, Bart Yakupzack and began with Mr. Yakupzack leading the meeting with the Pledge of Allegiance

II. Roll Call

Wendy Brogdon conducted a roll call. The following persons were present:

Pat Manuel

Billy Broussard

Chad Courville

Julie Hebert

Bart Yakupzack

Nathan Wall

Secretary Melancon

III. Approval of Minutes (November 05, 2015 and January 07, 2016)

Vice Chairman Yakupzack called for approval

MOTION was made by Commissioner Broussard and seconded by Commissioner Manuel.

Vice Chairman Yakupzack called for a vote and the motion passed.

IV. Commission Special Announcements / Personal Privilege

Vice Chairman Yakupzack introduced and welcomed the newly appointed secretary of Wildlife and Fisheries, Mr. Charlie Melancon.

Secretary Melancon thanked the Commission and the LDWF Staff for the warm welcome. He praised the job of the Commissioners and is looking forward to working with them.

Vice Chairman Yakupzack introduced and welcomed the newly appointed commissioner of the Louisiana Wildlife and Fisheries Commission, Mr. Nathan Wall.
Mr. Wall stated he is looking forward to serving on the Commission as he has a love and passion for the outdoors. He has worked in the commercial shrimp, crab and fur industries as well as alligator farming.

Vice Chairman Yakupzack welcomed former/outgoing Louisiana Wildlife and Fisheries Commissioner Mr. Dan Davis to speak
Dan Davis thanked the Commission and the Department for his time spent working with the Commission - very rewarding

MOTION made by Commissioner Broussard to Amend the Agenda
Commissioner Manuel seconded the Motion by Commissioner Broussard

No Comments Heard
Roll Call vote conducted by Wendy Brogdon
All Commissioners voted in favor to the Motion to amend the Agenda

MOTION by Commissioner Broussard to Amend the Agenda to add "Electing Commission Chairman and Vice Chairman"

Commissioner Hebert seconded the Motion by Commissioner Broussard

No Comments Heard

Vice Chairman Yakupzack called for a vote and the motion passed.

V. Enforcement Reports: January 2016
Captain Eddie Skeena, LDWF Enforcement

Enforcement Case Report:	Month	Year to Date
Written Citations:	578	578
Written Warnings:	197	197
Public Assistance:	23	23

Monthly Boating Crash / Incident Report:	Month	Year to Date
Boating Incidents:	6	6
Number of Injuries:	5	5
Number of Fatalities:	0	0

News Releases:

Two Men Cited in Orleans Parish for Shrimping During Closed Season

Louisiana Department of Wildlife and Fisheries (LDWF) Enforcement Division agents cited two men for alleged shrimping violations on Jan. 8 in Orleans Parish.

Agents patrolling in the Industrial Canal (Inner Harbor Navigation Canal) observed a skimming vessel actively shrimping around 9:30 p.m. During the inspection, agents found approximately 1,400 pounds of white shrimp on board the vessel.

Agents cited Michael D. Roussel Jr, 38, of Paulina, and Troy Cantillo, 49, of Gramercy, for using skimmers during a closed shrimp season and seized the entire catch. Both subjects were also cited for illegal shrimping in the Industrial Canal. The fall shrimp season for state inside waters was closed at sunset on Dec. 21, 2015.

Using skimmers during a closed shrimp season brings a $400 to $950 fine and up to 120 days in jail.

In addition to any and all other penalties, for the first conviction of shrimping during the closed season, the court may revoke or suspend the violator's trawl, skimmer, and butterfly gear licenses for one year from the date of the conviction. During such revocation or suspension, the violator may be present on a vessel harvesting or possessing shrimp or possessing a trawl, skimmer, or butterfly net, only if the vessel is equipped with and employs an operating vessel monitoring system which is accessible to LDWF. The court may also sentence the violator to perform 40 hours of community service.

Shrimping in the Industrial Canal carries up to a $500 fine and six months in jail.

Agents Cite Poacher for Harvesting 11 Deer this Season

Louisiana Department of Wildlife and Fisheries (LDWF) Enforcement Division agents cited a Newellton man for alleged deer hunting violations on Jan. 16.

Agents cited Michael F. Powell, 54, for taking over the season limit of antlered deer, taking over the daily limit of antlered deer, taking over the total limit of deer in a season and failing to abide by deer tagging regulations. Agents investigating a tip from the

public learned that Powell had harvested 11 total deer with nine of them being antlered deer from October to Jan. 16 this hunting season in Caldwell and Tensas parishes. Agents made contact with Powell at his residence in Tensas Parish on Jan. 16 and found Powell in possession of a freshly killed antlered deer without a tag. After a short investigation, agents found Powell in possession of eight more sets of deer antlers that he admitted to harvesting this season. That brought his total of antlered deer harvested this season to nine. Powell also admitted to killing two antlerless deer without tagging them earlier in the season. Agents also found the antlers to an 11 point buck and eight point buck in the collection of antlers that Powell admitted to killing on the same day. Agents seized the deer antlers and the rifle Powell said he used to harvest all the deer. Deer hunters are allowed a total of six deer during the season, but hunters can't exceed three antlered or four antlerless deer. During either sex days hunters are allowed to take one antlered and one antlerless deer per day. Taking over the season limit of antlered deer, daily limit of antlered deer and total limit of deer in a season each brings a $250 to $500 fine and up to 90 days in jail for each offense. Failing to comply with deer tagging regulations carries a $100 to $500 fine and up to 90s days in jail.
Powell may also face civil restitution totaling up to $18,860 for the illegally taken deer. Agents involved in the case are Sgt. Lee Tarver, Sgt. Joe Chandler, Sgt. Bear Fletcher, Sgt. Justin Goudey, and Senior Agent Joey Tarver.

Shooter of LDWF Agent Sentenced to Life in Prison

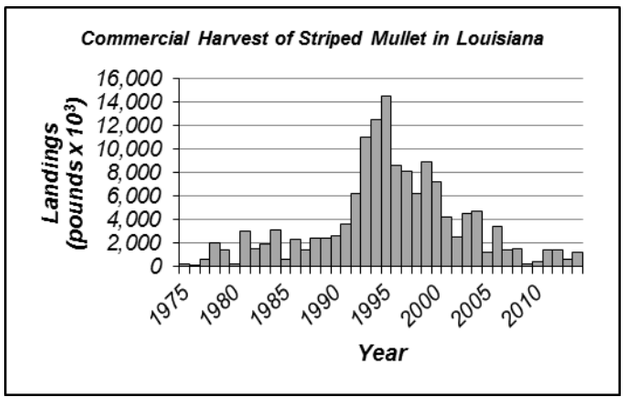
A Monroe man convicted of two counts of attempted first degree murder on Louisiana Department of Wildlife and Fisheries agents was sentenced to life in prison today, Jan. 27 in Ouachita Parish. Luke Jarrod Hust, 29, was sentenced by 4th District Court Judge Scott Leehy to three life sentences in prison without the benefit of parole for two counts of attempted first degree murder and one count of possession of a firearm by a convicted felon. Hust was found guilty on Dec. 3 by a jury of his peers for shooting LDWF Sgt. Scott Bullitt and shooting at another LDWF agent. "We are thankful this case is resolved to give Sgt. Bullitt and his family some closure and that the shooter will

spend the rest of his life behind bars where he belongs," said Col. Joey Broussard, head of the LDWF Enforcement Division. "We also want to thank the prosecutors and judge for securing the stiffest penalties possible so that Hust won't have the chance to commit another violent crime." Around 6:40 p.m. on May 21 LDWF Sgt. Scott Bullitt along with another agent stopped a vehicle at the end of Buckley Hill Road near the Wham Brake Boat Launch on the Russell Sage WMA. During the stop, Hust shot Sgt. Bullitt and at another agent before fleeing the scene into the woods. Sgt. Bullitt was rushed to a Monroe hospital and stabilized. Hust was captured around 11 p.m. that night. Sgt. Bullitt was then taken to Shreveport where he successfully underwent surgery to remove the bullet and bone fragments on May 26. Sgt. Bullitt is still rehabbing from his injuries and not yet returned to regular duty as a LDWF agent.

Sgt. Bullitt has been an LDWF agent for over five years. District Attorney Jerry Jones was the lead prosecutor for the state

VI. To hear a presentation on the Stock Assessment Report for Striped Mullet
Jason Adriance, LDWF Marine Fisheries

Commercial landings of striped mullet in Louisiana have significantly decreased in the last 20 years, with the highest harvest observed in 1995. The passages of Hurricanes Katrina and Rita caused substantial reduction in the directed effort of the commercial fleet when compared to previous years. Since 2007, annual harvest has remained below two-million pounds, with extremely low landings in 2009 and 2010. Since 2010, landings have increased, but remain at historically low levels. The marked decline in commercial landings since 2000 can be attributed to impacts from several hurricanes, increases in operating costs, and decreases in the demand and price of mullet roe.



A statistical catch at age model is used in this assessment to describe the dynamics of the Louisiana striped mullet stock (1996-2014). This model uses a maximum likelihood

fitting criterion to project population size from abundance estimates in the initial year and recruitment estimates in subsequent years. Fishing mortality is estimated as year and age-specific components. Landings are taken from the Louisiana Department of Wildlife and Fisheries (LDWF) Trip Ticket Program and National Marine Fisheries Service commercial statistical records. Indices of abundance are developed from the LDWF fishery-independent marine gillnet survey. Age composition of fishery and survey catches are estimated with age-length keys developed from samples directly from the fishery and a von Bertalanffy growth function. The conservation threshold established by the Louisiana Legislature for striped mullet is a 30% spawning potential ratio. Based on results of this assessment, the Louisiana striped mullet stock is currently neither overfished or experiencing overfishing. The current spawning potential ratio estimate is 56%.

Summary of Changes from 2015 Assessment

Assessment model inputs have been updated through 2014. No changes have been made to the assessment model itself. However, an additional index of abundance developed from the expanded marine experimental gillnet survey is incorporated into this assessment. Further, variance estimates of the abundance indices used as assessment model inputs are larger in this assessment due to changes in the index standardization process.

Q. Commissioner Broussard, This was urged by the Legislature or the Commission?

A. Jason Adriance, required annually through legislation via statute - Put into place during the 1990's.

(The Full Text of the Presentation is Made a part of the Record)

Update Assessment of Striped Mullet *Mugil cephalus* in Louisiana Waters
2016 Report

Joe West
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Table of Contents

1. Introduction

A statistical catch-at-age model is used in this assessment to describe the dynamics of the Louisiana (LA) striped mullet *Mugil cephalus* (SM) stock. The assessment model forward projects annual abundance at age from estimates of abundance in the initial year of the time-series and recruitment estimates in subsequent years. The model is fit to the data with a maximum likelihood fitting criterion. Minimum data requirements are fishery catch-at-age and an index of abundance (IOA). Landings values are taken from the Louisiana Department of Wildlife and Fisheries (LDWF) Trip Ticket Program and the National Marine Fisheries Service (NMFS) commercial statistical records. Indices of abundance are developed from the LDWF experimental marine gillnet survey. Age composition of fishery and survey catches are estimated with age-length keys derived from samples directly of the fishery and a von Bertalanffy growth function.

1.1 Fishery Regulations

The LA SM fishery is governed by the Louisiana State Legislature, the Wildlife and Fisheries Commission and the LDWF. Louisiana commercial and recreational SM fishery regulations were reviewed in the 2014 assessment report (West *et al.* 2014); full descriptions of historical regulations can be found in Mapes *et al*. (2001) and GSMFC (1995).

1.2 Trends in Harvest

Time-series of commercial and recreational SM landings in the Gulf of Mexico are presented (Table 1, Figure 1). Trends in harvest were reviewed in the 2014 assessment report (West *et al.* 2014).

2. Data Sources

2.1 Fishery Independent

The LDWF conducts routine FI monitoring surveys across Louisiana's coastal zone to primarily measure relative abundance and size compositions of recreationally and commercially important marine species. For sampling purposes, coastal Louisiana is currently divided into five LDWF coastal study areas (CSAs). Current CSA definitions are as follows: CSA 1 – Mississippi State line to South Pass of the Mississippi River (Pontchartrain Basin); CSA 3 – South Pass of the Mississippi River to Bayou Lafourche (Barataria Basin); CSA 5 – Bayou Lafourche to eastern shore of Atchafalaya Bay (Terrebonne Basin); CSA 6 – Atchafalaya Bay to western shore of Vermillion Bay (Vermillion/Teche/Atchafalaya Basins); CSA 7 – western shore of Vermillion Bay to Texas State line (Mermentau/Calcasieu/Sabine Basins).

The LDWF fishery-independent experimental marine gillnet survey is used in this assessment to develop indices of abundance for use in ASAP. This survey is conducted with standardized design and is one of the primary gears used to sample inshore finfish. The survey is conducted year-round. Sampling gear is a 750-foot long gillnet made up of 5 panels of 2.0, 2.5, 3.0, 3.5, and 4.0 inch stretch meshes. Samples are taken by 'striking' the net; where the net is set either parallel to the shore (or reef) or set in a crescent-shape. The vessel is then maneuvered both inside and outside of the net in gradually tightening circles a minimum of three times to force fish into the net. All captured SM are enumerated and a maximum of 30 randomly selected SM per mesh panel are collected for length measurements, gender determination, and maturity information. When more than 30 SM are captured per mesh panel, catch-at-size is derived as the product of total catch and proportional subsample-at-size.

This survey was conducted from 1986 to April 2013 at fixed sampling stations within each CSA. The 2.5 and 3.5 inch mesh sizes, however, were not included in this survey until 1988. In October of 2010, additional fixed stations were added to the survey allowing more spatial coverage within CSAs. Beginning in April 2013, the survey design

was modified where sampling locations are now selected randomly within each CSA. To alleviate time-series biases associated with the addition of these new stations and the changes in survey methodology, two discrete time-series of catch-rates are developed. The first or the "old" time-series (1986-2012) is developed by retaining long-term stations only for analyses (Figure 2). The second or the "new" time-series (2010-present) is developed by retaining all current sampling stations for analyses (Figure 2).

2.2 Fishery Dependent

Commercial

Commercial SM landings are taken from NMFS commercial statistical records (NMFS 2014a) and the LDWF Trip Ticket Program (Figure 1). Annual size composition of commercial catches (Table 2) are derived from the Trip Interview Program (TIPS; 1996-2001), the Fishery Information Network (FIN; 2007-2014), and by combination of data collection programs (TIPS+FIN; 2002-2006). Ages of commercial SM landings are derived from otoliths collected from LDWF sampling effort (see *Catch at Age Estimation*).

Recreational

As in prior assessments, the effects of recreational harvest on the stock were not considered. The MRFSS/MRIP harvest data indicates that LA recreational harvest is minimal relative to commercial harvest (Table 1; NMFS 2014b). Furthermore, only limited recreational size composition information is available from MRFSS/MRIP. The size information that is available indicates most of the recreational harvest is taken at sizes (age-0) prior to entering the commercial fishery (age-1+).

3. Life History Information

3.1 Unit Stock Definition

Striped mullet are a catadromous schooling fish common in warm, temperate coastal waters throughout the world. They are ubiquitous in the Gulf of Mexico (GOM) and can be found along extreme salinity gradients, from fresh to hyper-saline. Little or no genetic sub-structuring has been documented for GOM striped mullet. Thompson *et al.* (1991) found no differences in enzyme polymorphisms in striped mullet collected from various locations across Louisiana, or between those areas and mullet collected from the Pascagoula River (Mississippi), Mobile Bay (Alabama), and Charleston Bay (South Carolina). Campton and Mahmoudi (1991) also found little evidence for genetic sub-structuring of striped mullet populations between the Atlantic and GOM coasts of Florida. For the purpose of this assessment, however, the unit stock is defined as those female SM occurring in LA waters. This approach is consistent with the current statewide management strategy.

3.2 Morphometrics

Weight-length regressions for LA SM were developed by Thompson *et al.* (1991). Regression equation slopes comparing males and females were not significantly

different. For the purpose of this assessment, the non-sex-specific formulation is used with weight calculated from size as:

$$W = 2.1\times10^{-5}(FL)^{2.93} \quad [1]$$

where W is total weight in grams and FL is fork length in mm. Fish with only FL measurements available are converted to TL using the relationship provided by Thompson *et al*. (1991) where:

$$TL = 1.13\times(FL) - 3.40 \quad [2]$$

3.3 Growth

Von Bertalanffy growth functions for female LA SM collected from fishery-independent data sources were developed by Thompson *et al.* (1991) with size-at-age calculated from:

$$FL_a = 471.70\times(1 - e^{-0.28(a-0.03)}) \quad [3]$$

where FL_a is FL-at-age in mm and years.

3.4 Sex Ratio

The probability of being female at a specific size is estimated with a logistic function developed in an earlier assessment (West *et al.* 2014) as:

$$P_{fem,l} = \frac{1}{[1+e^{[-0.24(TL-10.04)]}]} \quad [4]$$

where $P_{fem,l}$ is the estimated proportion of females in 1 inch TL intervals. The minimum sex ratio-at-size is assumed as 50:50.

3.5 Fecundity/Maturity

Per capita fecundity functions for LA SM were developed by Thompson *et al*. (1991) with fecundity-at-size computed as:

$$f_l = 5.6\times10^{-3}(FL)^{3.18} \quad [5]$$

Where f_l is the average fecundity of a size l female in FL. Fecundity-at-age f_a is then computed by substituting equation [5] into equation [3]. Female SM maturity is assumed knife-edged at age-2.

3.6 Natural Mortality

Striped mullet can live to at least ten years of age (Thompson *et al.* 1991). For purposes of this assessment, an average value of $\overline{M}$ is assumed (0.3), but is allowed to vary with weight-at-age to calculate a declining natural mortality rate with age. This average value of M is consistent with a stock where approximately 1.5% of the population remains alive to 10 years of age (Hewitt and Hoenig 2005). Following SEDAR 12 (SEDAR 2006), the estimate is rescaled where the mean mortality rate over ages vulnerable to the fishery is equivalent to the average rate as:

$$M_a = \overline{M}\frac{nL(a)}{\sum_{a_c}^{a_{max}} L(a)} \quad [6]$$

Where $\overline{M}$ is the average mortality rate over exploitable ages a, a_{max} is the oldest age-class, a_c is the first fully-exploited age-class, n is the number of exploitable ages, and

$L(a)$ is the Lorenzen curve as a function of age. The Lorenzen curve as a function of age is calculated from:

$$L(a) = W_a^{-0.288} \quad [7]$$

where -0.288 is the allometric exponent estimated for natural ecosystems (Lorenzen 1996) and W_a is weight-at-age.

3.7 Relative Productivity / Resilience

The key parameter in age-structured population dynamics models is the steepness parameter (h) of the stock-recruitment relationship. Steepness is defined as the ratio of recruitment levels when the spawning stock is reduced to 20% of its unexploited level relative to the unexploited level and determines the degree of compensation in the population (Mace and Doonan 1988). Populations with higher steepness values are more resilient to perturbation and if the spawning stock is reduced to levels where recruitment is impaired are more likely to recover sooner once overfishing has ended. Generally, this parameter is difficult to estimate due to a lack of contrast in spawning stock size (*i.e.,* data not available at both high and low levels of stock size) and is typically fixed or constrained during the model fitting process. Estimates of steepness are not available for GOM striped mullet.

Productivity is a function of fecundity, growth rates, natural mortality, age of maturity, and longevity and can be a reasonable proxy for resilience. We characterize the relative productivity of LA SM based on life-history characteristics, following SEDAR 9, with a classification scheme developed at the FAO second technical consultation on the suitability of the CITES criteria for listing commercially-exploited aquatic species (FAO 2001; Table 3). Each life history characteristic (von Bertalanffy growth rate, age at maturity, longevity, and natural mortality rate) is assigned a rank (low=1, medium=2, and high=3) and then averaged to compute an overall productivity score. In this case, the overall productivity score is 2.5 for LA striped mullet indicating medium to high productivity and resilience.

4. Abundance Index Development

Striped mullet IOAs of the “old” and “new” time-series are developed from the LDWF experimental marine gillnet survey. Only those CSAs (1, 5, 6, and 7), months (November – February), and mesh panels (2.0, 2.5, 3.0, 3.5 inch) with ≥5% positive samples are included in IOA development. Samples collected during the months of January and February are grouped with the previous year’s November and December samples. Catch per unit effort is defined as the number of female striped mullet caught per net sample. The number of female mullet caught per gillnet sample is calculated from each samples catch at size and equation [4].

To reduce unexplained variability in catch rates unrelated to changes in abundance, each IOA was standardized using methods described below. A delta lognormal

approach (Lo *et al.* 1992; Ingram *et al.* 2010) is used to standardize female SM catch-rates in each year as:

$$I_y = c_y p_y \quad [8]$$

where c_y are estimated annual mean CPUEs of non-zero catches modeled as lognormal distributions and p_y are estimated annual mean probabilities of capture modeled as binomial distributions. The lognormal model considers only the positive samples; the binomial model considers all samples. The lognormal and binomial means and their standard errors are estimated with generalized linear mixed models as least square means and back transformed. Each IOA is then computed from equation [8] using the estimated least-squares means with variances calculated from:

$$V(I_y) \approx V(c_y)p_y^2 + c_y^2 V(p_y) + 2c_y p_y \text{Cov}(c,p) \quad [9]$$

where $\text{Cov}(c,p) \approx \rho_{c,p}[SE(c_y)SE(p_y)]$ and $\rho_{c,p}$ represents the correlation of c and p among years.

Because of the designed nature of LDWF fishery-independent surveys, model development was rather straightforward. Variables considered in model inclusion were year, CSA, and sampling location. Because only seasonal samples are included in each IOA (i.e., November-February) time of year was not considered in model inclusion. To determine the most appropriate models, we began the model selection process with fully-reduced models that included only year as a fixed effect. More complex models were then developed including interactions and random effects and compared using AIC and log-likelihood values. All sub-models were estimated with the SAS generalized linear mixed modeling procedure (PROC GLIMMIX; SAS 2009). In the final sub-models, year was considered a fixed effect, CSA was considered a random block effect, and sampling locations within CSAs were considered random subsampling block effects. Fits of lognormal sub models were evaluated with conditional residual plots. Binomial sub models were evaluated for over dispersion via Pearson's chi-square per degree of freedom statistic (Stroup 2013).

Annual sample sizes, observed percent positive samples, nominal CPUEs, standardized IOAs, and corresponding coefficients of variation of the "old" and "new" time-series are presented (Table 4). Standardized IOAs and 95% confidence intervals of the "old" and "new" time-series are also presented graphically (Figure 3). Conditional residual plots of the lognormal sub-models indicate reasonable fits. Pearson's chi-square per degree of freedom statistics indicate no over dispersion in the binomial sub-models ("old" time-series=1.0; "new" time-series=0.8).

5. Catch at Age Estimation

Age-length-keys (ALKs) are developed to estimate the annual age composition of fishery and survey catches as described below.

5.1 Fishery

Only female SM otoliths collected from fishery-dependent sources are used in age assignments of fishery landings in this assessment. Ages are assigned by assuming a January 1st birthday, where SM spawned the previous year become age-1 on January 1st and remain age-1 until the beginning of the following year.

Probabilities of age given length for annual fishery landings are computed as:

$$P(a|l)_y = \frac{n_{lay}}{\sum_a n_{lay}} \quad [10]$$

where n_{lay} are annual female SM sample sizes occurring in each length/age bin (Tables 5 and 6). Table 5 is used to calculate $P(a|l)_y$ for 1996-2002 landings, where limited annual sample sizes preclude use of annual ALKs. Annual fishery catch-at-age (females only) is then taken as:

$$C_{ay} = \sum_l P_{fem,l} C_{ly} P(a|l)_y \quad [11]$$

where $P_{fem,l}$ is taken from equation [4], C_{ly} is annual fishery catch-at-size, and $P(a|l)_y$ are taken from equation [10]. Resulting annual fishery catch-at-age and associated mean weights-at-age are presented (Tables 7 and 8).

5.2 Survey

Probabilities of age given length for female SM catches of the experimental marine gillnet survey are computed as:

$$P(a|l) = \frac{P(l|a)}{\sum_a P(l|a)} \quad [12]$$

with the probability of length given age estimated from a normal probability density as:

$$P(l|a) = \frac{1}{\sigma_a \sqrt{2\pi}} \int_{l-d}^{l+d} exp\left[-\frac{(l-l_a)^2}{2\sigma_a^2}\right] dl \quad [13]$$

where length bins are 1 inch TL intervals with midpoint l, maximum $l + d$, and minimum $l - d$ lengths. Mean length-at-age l_a is estimated from Equation [3]. The standard deviation in length-at-age is approximated from $\sigma_a = l_a CV_l$, where the coefficient of variation in length-at-age is assumed constant (in this case 0.05). To approximate changes in growth with the timing of the survey, mean l_a is calculated at the end of the calendar year (*i.e.,* age=$a + 1.0$). Resulting survey $P(a|l)$ is presented (Table 9). Annual survey female catch-at-age is then taken from equation [11] with annual survey catch-at-size substituted for fishery catch-at-size. Annual survey catch-at-size is derived using only those samples included in abundance index development. Annual survey catch-at-size and resulting annual survey age compositions (females only) for the “old” and ”new” time-series are presented (Tables 10-12).

6. Assessment Model

In this assessment update, the Age-Structured Assessment Program (ASAP3 Version 3.0.12; NOAA Fisheries Toolbox http://nft.nefsc.noaa.gov) is used to describe the dynamics of the female proportion of the LA SM stock. ASAP is a statistical catch-at-age model that allows internal estimation of a Beverton-Holt stock recruitment relationship and MSY-related reference points. Minimum data requirements are fishery catch-at-age, corresponding mean weights-at-age, and a tuning index. ASAP projects abundance at age from estimates of abundance in the initial year of the time-series and recruitment estimates in subsequent years. The model is fit to the data with a maximum likelihood fitting criterion. An overview of the basic model configuration, equations, and their estimation, as applied in this assessment, are provided below. Specific details and full capabilities of ASAP can be found in the technical documentation (ASAP3; NOAA Fisheries Toolbox).

6.1 Model Configuration

The model is configured with annual time-steps (1996-2014) and a calendar year time frame. As in earlier assessments, only the years 1996-2014 are modeled due to the limited size and age information available from earlier years of the fishery. Since the commercial SM strike net fishery season runs from the 3rd Monday in October through the 3rd Monday of the following January, SM harvested in January are grouped with the previous year's landings for modeling purposes.

Mortality

Fishing mortality is assumed separable by age a and year y as:

$$F_{ay} = v_a Fmult_y \quad [14]$$

where v_a are fishery selectivities and $Fmult_y$ are fully-selected fishing mortality rates. Apical fishing mortality is estimated in the initial year and as deviations from the initial estimate in subsequent years.

Age-specific fishery selectivities are modeled with a single logistic function as:

$$v_a = \frac{1}{1+e^{-(a-\alpha)/\beta}} \quad [15]$$

Total mortality for each age and year is estimated from the age-specific natural mortality rate M_a and estimated fishing mortalities as:

$$Z_{ay} = M_a + F_{ay} \quad [16]$$

For reporting purposes, annual fishing mortalities are averaged by weighting by population abundance as:

$$F_y = \frac{\sum_a F_{ay} N_{ay}}{\sum_a N_{ay}} \quad [17]$$

Abundance

Abundance in the initial year of the time series and recruitment in subsequent years are estimated and used to forward calculate the remaining numbers at age from the age and year specific total mortality rates as:

$$N_{ay} = N_{a-1,y-1} e^{-Z_{a-1,y-1}} \quad [18]$$

Numbers in the plus group A are calculated from:

$$N_{Ay} = N_{A-1,y-1}e^{-Z_{A-1,y-1}} + N_{A,y-1}e^{-Z_{A,t-1}} \quad [19]$$

Stock Recruitment

Expected recruitment is calculated from the Beverton-Holt stock recruitment relationship, reparameterized by Mace and Doonan (1988), with annual lognormal deviations as:

$$\hat{R}_{y+1} = \frac{\alpha SS_y}{\beta + SS_y} + e^{\delta_{y+1}} \quad [20]$$

$$\alpha = \frac{4\tau(SS_0/SPR_0)}{5\tau-1} \text{ and } \beta = \frac{SS_0(1-\tau)}{5\tau-1}$$

where SS_0 is unexploited spawning stock, SPR_0 is unexploited spawning stock per recruit, τ is steepness, and $e^{\delta_{y+1}}$ are annual lognormal recruitment deviations..

Spawning Stock

Spawning stock in each year is calculated from:

$$SS_y = \sum_{i=1}^{A} N_{ay}\Phi_{ay}\, e^{-Z_{ay}(0.0)} \quad [21]$$

where Φ_{ay} is per capita fecundity at age, and $-Z_{ay}(0.0)$ is the proportion of total mortality occurring prior to spawning on January 1st .

Catch

Expected fishery catches are estimated from the Baranov catch equation as:

$$\hat{C}_{ay} = N_{ay}F_{ay}\frac{(1-e^{-Z_{ay}})}{Z_{ay}} \quad [22]$$

Expected age composition of fishery catches are then calculated from $\frac{\hat{C}_{ay}}{\sum_a \hat{C}_{ay}}$. Expected yields are then computed as $\sum_a \hat{C}_{ay}\overline{W}_{ay}$, where $\overline{W}_{ay}$ are observed mean catch weights.

Catch-rates

Expected survey catch-rates are computed from:

$$\hat{I}_{ay} = q\sum_a N_{ay}(1 - e^{-Z_{ay}(1.0)})v_a \quad [23]$$

where v_a are the age-specific survey selectivities, q is the estimated catchability coefficient, and $-Z_{ay}(1.0)$ is the proportion of the total mortality occurring prior to the time of the survey (December 31st midpoint). Age-specific survey selectivities are modeled with a double logistic function as:

$$v_a = \left(\frac{1}{1+e^{-(a-\alpha)/\beta}}\right)\left(1 - \frac{1}{1+e^{-(a-\alpha 2)/\beta 2}}\right) \quad [24]$$

Expected survey age composition is then calculated as $\frac{\hat{I}_{ay}}{\sum_a \hat{I}_{ay}}$.

Parameter Estimation

The number of parameters estimated is dependent on the length of the time-series, number of fisheries and selectivity blocks modeled, and number of tuning indices modeled. Parameters are estimated in log-space and then back transformed. In this assessment, 57 parameters are estimated:

1. 10 selectivity parameters (2 for the fishery; 4 for each survey)
2. 19 apical fishing mortality rates (F_{mult} in the initial year and 18 deviations in subsequent years)
3. 19 recruitment deviations (1996-2014)
4. 6 initial population abundance deviations (age-2 through 7-plus)

5. 2 catchability coefficients (1 for each survey)
6. 1 stock-recruitment parameter (virgin stock size; the steepness parameter is fixed at 1.0 for the base run).

The model is fit to the data by minimizing the objective function:

$$-ln(L) = \sum_i \lambda_i(-ln\, L_i) + \sum_j(-ln\, L_j) \quad [25]$$

where $-ln(L)$ is the entire negative log-likelihood , lnL_i are log-likelihoods of lognormal estimations, λ_i are user-defined weights applied to lognormal estimations, and lnL_j are log-likelihoods of multinomial estimations.

Negative log-likelihoods with assumed lognormal error are derived (ignoring constants) as:

$$-ln(L_i) = ln(\sigma) + 0.5 \sum_i \frac{[ln(obs_i) - ln(pred_i)]^2}{\sigma^2} \quad [26]$$

where obs_i and $pred_i$ are observed and predicted values; standard deviations σ are user-defined CVs as $\sqrt{ln(CV^2 + 1)}$.

Negative log-likelihoods with assumed multinomial error are derived (ignoring constants) as:

$$-ln\left(L_j\right) = -ESS \sum_{i=1}^{A} p_i\, ln(\hat{p}_i) \quad [27]$$

where p_i and $\hat{p}_i$ are observed and predicted age composition. Effective sample-sizes ESS are used to create the expected numbers $\hat{n}_a$ in each age bin and act as multinomial weighting factors.

6.2 Model Assumptions/Inputs

Model assumptions include: 1) the unit stock is adequately defined and closed to migration, 2) observations are unbiased, 3) errors are independent and their structures are adequately specified, 4) fishery vulnerabilities are flat topped; survey vulnerabilities are dome-shaped, 5) abundance indices are proportional to absolute abundance, and 6) natural mortality, fecundity, growth and sex ratio at size/age do not vary significantly with time. Lognormal error is assumed for catches, abundance indices, the stock-recruitment relationship, apical fishing mortality, selectivity parameters, initial abundance deviations, and catchability. Multinomial error is assumed for fishery and survey age compositions.

The base model was defined with an age-7 plus group, steepness fixed at 1.0, one fishery selectivity block, one survey selectivity block for each time-series, and input levels of error and weighting factors as described as follows. Input levels of error for fishery landings were specified with CV's of 0.1 for each year of the time-series; annual recruitment deviations were specified with CV's of 0.5. All lambdas for lognormal components included in the objective function were equally weighted (=1). Input effective sample sizes for estimation of fishery age compositions were specified as ESS=50 for years where annual ALKs were available (2003-2014) and down weighted

to ESS=25 for years where the pooled ALK was used (1996-2002). Input effective sample size for estimation of survey age compositions, where ages were assigned from a von Bertalanffy growth function, were specified as ESS=10 for all years.

6.3 Model Results

Objective function components, weighting factors, and likelihood values of the base model are summarized in Table 13.

Model Fit

The base model provides an overall reasonable fit to the data. Predicted catches match the observations well, with no strong pattern in residuals (Figure 4). Predicted survey catch-rates also match the data well with no strong pattern in residuals, but fail to fit the high catch rate observed in 2005 (Figures 5 and 6). Predicted fishery and survey age compositions provide good fits to the input age proportions (Figures 7-9). However, predicted fishery age compositions overestimate the age-7-plus group input proportions in the most recent years.

Selectivities

Estimated fishery and survey selectivities are presented in Figure 10. Fishery estimates indicate full-vulnerability to the commercial gill net fishery at age 5 with over 50% vulnerable at age 3. Survey estimates of the “old” and “new” time-series indicate full vulnerability to the FI survey gear at age 2.

Abundance, Recruitment, and Spawning Stock

Total stock size and abundance at age estimates from the base model are presented in Table 14. Stock size has varied over the time-series. Stock size decreased from 29.2 million females in 1996 to a minimum of 9.5 million females in 2005. Since 2005, stock size increased to a peak of 24.8 million females in 2012. The 2014 estimate of stock size is 20.9 million females.

Recruitment estimates from the base model are presented in Figure11. Recruitment has varied over the time-series. Age-1 recruit estimates decreased from 11.5 million fish in 1996 to 3.8 million age-1 fish in 2005. Since 2005, recruitment increased to a peak of 14.6 million age-1 fish estimated in 2012. The 2014 estimate of age-1 recruits is 6.3 million age-1 females.

Spawning stock estimates (total egg production) are presented in Figure 12. Spawning stock has varied over the time series with a decreasing trend in early years to an increasing trend in later years. Spawning stock decreased from 4.9 trillion eggs in 1996 to a minimum of 1.9 trillion eggs in 2007. Since 2007, the trend has been upward with an estimate of 5.9 trillion eggs in 2014.

Fishing Mortality

Estimated fishing mortality rates are presented in Table 15 (apical, average, and age-specific) and Figure 13 (average only). Average rates are weighted by population numbers at age. Average fishing mortality has varied over the time-series with an

overall decreasing trend. The highest estimates of F were in earlier years of the time series with peaks observed in 1999 and 2004 (0.29 and 0.32 yr^{-1}). Since 2004, average fishing mortality rates decreased to a minimum of 0.01 yr^{-1} in 2009 and has remained low. The 2014 estimate of average F is 0.03 yr^{-1}.

Stock-Recruitment

No discernable relationship is observed between spawning stock and subsequent age-1 recruitment (Figure 14). The ASAP base model was run with steepness fixed at 1.0. The unexploited spawning stock estimate was 8.7 trillion eggs. When allowed to directly solve for steepness, the parameter was estimated as 0.41. Alternate runs with steepness values fixed at 0.9, 0.8, and 0.7 are discussed in the *Model Diagnostics* Section below.

Parameter Uncertainty

In the ASAP base model, 57 parameters were estimated. Asymptotic standard errors for the time-series of age-1 recruits are presented in Figure 11. Markov Chain Monte Carlo derived confidence intervals (95%) for average fishing mortality rates and the spawning stock time-series are presented in Figures 12 and 13.

6.4 Management Benchmarks

The conservation standard established by the LA Legislature for striped mullet (RS 56:333) is a 30% spawning potential ratio (SPR; Goodyear 1993). Methodology used in this assessment to estimate equilibrium yield, spawning stock (total egg production), and average fishing mortality rates that lead to 30% SPR are described below. Current conditions are taken by averaging estimates from the final three years of the modeled time-series (2012-2014).

When the stock is in equilibrium, equation [21] can be solved, excluding the year index, for any given exploitation rate as:

$$\frac{SS}{R}(F) = \sum_{i=1}^{A} N_a \Phi_a \, e^{-Z_a(0.0)} \quad [28]$$

where total mortality at age Z_a is computed as $M_a + v_a Fmult$; vulnerability at age v_a is taken by rescaling the current F-at-age estimate (geometric mean 2012-2014) to the maximum. Per recruit abundance-at-age is estimated as $N_a = S_a$, where survivorship at age is calculated recursively from $S_a = S_{a-1} e^{-Z_a}$, $S_1 = 1$. Per recruit catch-at-age is then calculated with the Baranov catch equation [22], excluding the year index. Yield per recruit (Y/R) is then taken as $\sum_a C_a \overline{W}_a$ where $\overline{W}_a$ are current mean fishery weights at age (arithmetic mean 2012-2014).

Equilibrium spawning stock SS_{eq} is calculated by substituting SS/R estimated from equation [28] into the Beverton-Holt stock recruitment relationship as $\alpha \times SS/R - \beta$. Equilibrium recruitment R_{eq} and yield Y_{eq} are then taken as $SS_{eq} \div SS/R$ and $Y/R \times R_{eq}$. Fishing mortality is averaged as $\sum_a F_a N_a / \sum_a N_a$. Equilibrium SPR is then computed as the ratio of SS/R when F>0 to SS/R when F=0.

As reference points to guide management, we estimate the average fishing mortality rate and spawning stock size that lead to a 30% SPR ($F_{30\%}$ and $SS_{30\%}$). Also presented are a plot of the stock recruitment data, equilibrium recruitment, and diagonals from the origin intersecting R_{eq} at the minimum and maximum spawning stock estimates of the time-series, corresponding with a minimum equilibrium SPR of 21% and a maximum of 66% (Figure 15). The current estimate of equilibrium SPR is 56%. Estimates of $F_{30\%}$ and $SS_{30\%}$ are also presented in Table 16.

6.5 Model Diagnostics

Sensitivity Analysis

A series of sensitivity runs are used to explore uncertainty in the base model's configuration. The ASAP base model was run with steepness fixed at 1.0. When allowed to directly solve for steepness, the parameter was estimated as 0.41. Alternate runs were conducted examining reference point estimates ($F_{30\%}$, $SS_{30\%}$, $Y_{30\%}$, $F_{current}/F_{30\%}$, and $SS_{current}/SS_{30\%}$) with steepness fixed at 0.9, 0.8 and 0.7. Current conditions are taken by averaging estimates from the final three years of the modeled time-series (2012-2014). Additional sensitivity runs were conducted by separately increasing the lognormal weighting factors of the catch and IOA components of the base models objective function (*i.e.*, lambdas increased from 1 to 5).

Results of the sensitivity analysis are presented in Table 17. Reference point estimates from all other sensitivity runs indicate the stock is currently above $SS_{30\%}$ and the fishery is currently operating below $F_{30\%}$. Estimates of $F_{30\%}$, $SS_{30\%}$, and $Y_{30\%}$ for each sensitivity run were similar in magnitude (0.15 yr^{-1}, 2.6-3.2 trillion eggs, and 2.6-3.2 million pounds, respectively).

Retrospective Analysis

A retrospective analysis was conducted by sequentially truncating the base model by a year (terminal years 2010-2013). Retrospective estimates of recruitment, $SS/SS_{30\%}$, and $F/F_{30\%}$ are presented in Figure 16, where $SS_{30\%}$ and $F_{30\%}$ are computed from the base model run. Estimated terminal year $SS/SS_{30\%}$, $F/F_{30\%}$, and recruitment differed from the full base run. Terminal year $SS/SS_{30\%}$ estimates indicate positive bias, where $SS/SS_{30\%}$ decreases as more years are added to the model. Terminal year $F/F_{30\%}$ estimates indicate negligible bias. Terminal year recruitment estimates indicate both positive and negative bias.

7. Stock Status

The history of the LA striped mullet stock relative to $F/F_{30\%}$ and $SS/SS_{30\%}$ is presented in Figure 17. Given the established conservation standard of 30% SPR, fishing mortality rates exceeding $F_{30\%}$ ($F/F_{30\%}>1.0$) are defined as overfishing; spawning stock sizes below $SS_{30\%}$ ($SS/SS_{30\%}< 1.0$) are defined as the overfished condition.

Overfishing Status

Using results of the ASAP model presented in this assessment, the current estimate of $F/F_{30\%}$ is <1.0, suggesting the stock is currently not undergoing overfishing. However, the assessment model indicates that the stock did experience overfishing in earlier years of the time-series.

Overfished Status

The current estimate of $SS/SS_{30\%}$ is >1.0, suggesting the stock is currently not in an overfished state. However, the assessment model indicates that the stock was in an overfished state in earlier years of the time-series.

Control Rules

As specified in RS 56:333 (http://www.legis.la.gov/Legis/Law.aspx?d=105230), if the annual LDWF striped mullet stock assessment indicates that the current spawning potential ratio is <30%, the department shall close the season within two weeks for a period of at least one year.

8. Research and Data Needs

As with any analysis, the accuracy of this assessment is dependent on the accuracy of the information of which it is based. Mapes et al. (1998) identify several areas for research to address. Below we list additional recommendations to improve future LA assessments of striped mullet.

Only limited age data are available from the LDWF marine gillnet survey. Ages of survey catches in this assessment were assigned from a von Bertalanffy growth function. Age samples collected directly from the survey in question would allow a more accurate representation of survey age composition in future assessments.

Methods to characterize fishery catch at age for years prior to 1996 need to be examined. Inclusion of years prior to the 1995 peak in commercial striped mullet landings in the assessment model should provide better contrast in spawning stock size and allow more certainty in reference point estimation.

Factors that influence year-class strength of striped mullet are poorly understood. Investigation of these factors, including inter-annual variation in seasonal factors and the influence of environmental perturbations such as the Deepwater Horizon oil spill, could elucidate causes of inter-annual variation in abundance, as well as the species stock-recruitment relationship.

Fishery-dependent data alone is not a reliable source of information to assess status of a fish stock. Consistent fishery-dependent and fishery-independent data sources, in a comprehensive monitoring plan, are essential to understanding the status of fishery. A new LDWF fishery-independent survey methodology was implemented in 2013. This

methodology should be assessed for adequacy with respect to its ability to evaluate stock status, and modified if deemed necessary.

With the recent trend toward ecosystem-based assessment models, more data is needed linking striped mullet population dynamics to environmental conditions. The addition of meteorological and physical oceanographic data coupled with food web data may lead to a better understanding of the striped mullet stock and its habitat.

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10. Tables

Table 1: Annual Louisiana commercial and recreational striped mullet *Mugil cephalus* landings (pounds x 10^3) derived from NMFS statistical records, LDWF trip ticket program, and MRFSS/MRIP. Recreational landings are A+B1 catches only. Note: Louisiana MRFSS/MRIP estimates are not available for 2014

	Harvest		
Year	Commercial	Recreational	% Recreational
1981	3,051	1	0.0%
1982	1,533	17	1.1%
1983	1,887	0	0.0%
1984	3,157	3	0.1%
1985	579	8	1.3%
1986	2,278	53	2.3%
1987	1,439	0	0.0%
1988	2,367	106	4.3%
1989	2,414	75	3.0%
1990	2,646	296	10.1%
1991	3,563	26	0.7%
1992	6,215	121	1.9%
1993	11,026	185	1.7%
1994	12,560	98	0.8%
1995	14,546	90	0.6%
1996	8,659	217	2.4%
1997	8,083	130	1.6%
1998	6,252	15	0.2%
1999	8,954	49	0.5%
2000	7,253	88	1.2%
2001	4,260	116	2.6%
2002	2,555	59	2.3%
2003	4,524	3	0.1%
2004	4,754	3	0.1%
2005	1,238	13	1.0%
2006	3,361	2	0.1%
2007	1,375	391	22.1%
2008	1,503	1	0.1%
2009	189	36	16.2%
2010	362	12	3.2%
2011	1,385	18	1.3%
2012	1,394	50	3.5%
2013	609	77	11.2%
2014	1,186	--	--

Table 2: Annual size frequency samples of Louisiana commercial striped mullet *Mugil cephalus* landings derived from the Trip Interview Program (TIPS; 1996-2001), the Fishery Information Network (FIN; 2007-2014), and by combination of data collection programs (TIPS+FIN; 2002-2006)

TL_in	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
6																			
7																			
8																			
9																			
10	3																	2	
11	8	2	1										1					1	
12	59	44	1	10				3	1		10	8	7		1	1	1	8	
13	271	183	5	20	1	3	11	30	22	11	25	25	35		26	22	19	38	11
14	518	537	45	37	9	20	37	101	68	61	53	78	103	1	50	39	45	131	73
15	401	595	73	114	40	41	49	142	122	151	107	194	150	10	23	40	112	255	139
16	308	453	110	244	83	40	53	169	267	182	164	256	155	49	41	94	153	276	262
17	202	230	126	248	87	75	31	151	342	154	135	187	160	165	33	254	260	181	115
18	121	108	94	259	73	41	7	110	209	117	117	127	106	215	34	330	244	43	17
19	61	36	36	148	43	18	4	36	58	19	47	74	37	134	6	118	63	5	1
20	14	14	6	49	16	1		8	20		15	12	16	79	1	19	5		1
21	6	3		13	2				2		1	2	1	20		3			
22	2			2	1							1		6			2		
23													1	1					
24	1																		
25																			
26																			
27	2																		
28																			
Totals	1977	2205	497	1144	355	239	192	750	1111	695	674	964	772	680	215	920	904	940	619

Table 3: FAO proposed guidelines for indices of productivity for exploited fish species

Parameter	**Productivity**			**Species**	
	Low	**Medium**	**High**	*Striped Mullet*	**Score**
M	*<0.2*	*0.2 - 0.5*	*>0.5*	***0.3***	*2*
K	*<0.15*	*0.15 - 0.33*	*>0.33*	***0.28***	*2*
tmat	*>8*	*3.3 - 8*	*<3.3*	***2***	*3*
tmax	*>25*	*14 - 25*	*<14*	***10***	*3*
Examples	*orange roughy, many sharks*	*cod, hake*	*sardine, anchovy*	***Striped Mullet Productivity Score = 2.5 (med/high)***	

Table 4: Annual sample sizes, proportion positive samples, nominal CPUEs, indices of abundance, and corresponding coefficients of variation of the “old” and “new” time-series derived from the LDWF fishery-independent marine gillnet survey. Nominal CPUEs and the indices of abundance have been normalized to their individual long-term means for comparison

	“Old” IOA					***“New” IOA***				
Year	*n*	*%Pos*	*CPUE*	*IOA*	*CV*	*n*	*%Pos*	*CPUE*	*IOA*	*CV*
1988	*229*	*20%*	*0.36*	*0.15*	*0.29*	--	--	--	--	--
1989	*243*	*19%*	*0.40*	*0.16*	*0.29*	--	--	--	--	--
1990	*253*	*20%*	*0.49*	*0.19*	*0.29*	--	--	--	--	--
1991	*257*	*19%*	*0.58*	*0.19*	*0.29*	--	--	--	--	--
1992	*175*	*21%*	*0.56*	*0.21*	*0.29*	--	--	--	--	--
1993	*172*	*20%*	*0.51*	*0.19*	*0.30*	--	--	--	--	--
1994	*167*	*22%*	*1.08*	*0.22*	*0.29*	--	--	--	--	--
1995	*133*	*27%*	*1.40*	*0.31*	*0.28*	--	--	--	--	--
1996	*136*	*18%*	*0.29*	*0.12*	*0.32*	--	--	--	--	--
1997	*144*	*18%*	*1.64*	*0.27*	*0.31*	--	--	--	--	--
1998	*148*	*22%*	*0.72*	*0.23*	*0.29*	--	--	--	--	--
1999	*148*	*15%*	*0.58*	*0.12*	*0.33*	--	--	--	--	--
2000	*141*	*18%*	*0.78*	*0.23*	*0.31*	--	--	--	--	--
2001	*148*	*16%*	*0.88*	*0.14*	*0.32*	--	--	--	--	--
2002	*148*	*19%*	*0.57*	*0.16*	*0.31*	--	--	--	--	--
2003	*148*	*16%*	*0.65*	*0.15*	*0.32*	--	--	--	--	--
2004	*149*	*20%*	*0.58*	*0.19*	*0.30*	--	--	--	--	--
2005	*141*	*23%*	*0.86*	*0.30*	*0.29*	--	--	--	--	--
2006	*148*	*18%*	*0.82*	*0.19*	*0.31*	--	--	--	--	--
2007	*146*	*20%*	*0.72*	*0.22*	*0.30*	--	--	--	--	--
2008	*148*	*17%*	*0.53*	*0.17*	*0.32*	--	--	--	--	--
2009	*145*	*16%*	*0.42*	*0.11*	*0.33*	--	--	--	--	--
2010	*139*	*18%*	*1.13*	*0.23*	*0.32*	*307*	*15%*	*0.66*	*0.15*	*0.29*
2011	*140*	*19%*	*0.52*	*0.17*	*0.31*	*328*	*17%*	*0.45*	*0.16*	*0.29*
2012	*138*	*19%*	*0.41*	*0.15*	*0.31*	*315*	*16%*	*0.32*	*0.12*	*0.29*
2013	--	--	--	--	--	*150*	*16%*	*0.43*	*0.16*	*0.31*
2014	--	--	--	--	--	*150*	*13%*	*0.36*	*0.12*	*0.32*

Table 5: Length-at-age samples used for age assignments of commercial striped mullet *Mugil cephalus* landings 1996-2002 (females only)

1996-2002											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12		4	2	1							7
13		21	27	6	1						55
14		28	65	35	4	1		1			134
15	2	28	43	28	6	4	1				112
16	1	18	29	20	8	2					78
17		7	34	15	6	5	2				69
18		3	23	21	9	2					58
19		1	8	11	7	3	1				31
20				2	4	2		1			9
21			1	1	1		1	1			5
22											
23											
24											
25											
26											
Total	3	110	232	140	46	19	5	3	0	0	558

Table 6: Annual length-at-age samples for age assignments of commercial striped mullet *Mugil cephalus* landings 2003-2013 (females only)

2003											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12		1	1	1							3
13		13	3	4	3						23
14		9	18	17	6						50
15		6	34	18	4	1					63
16		3	37	38	20	3					101
17		4	17	40	29	6		1			97
18		1	8	20	26	4	8	2			69
19		3	5	6	8	6	3				31
20				2	1	2	1				6
21											
22											
23											
24											
25											
26											
Total	0	40	123	146	97	22	12	3	0	0	443

2004											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13		1	4								5
14		2	10	4	3	2					21
15		6	28	12	5	3					54
16		5	24	33	13	8					83
17		2	37	58	32	9					138
18			14	47	34	27	1				123
19			2	10	15	9	3				39
20				2	6	4	1				13
21						1					1
22											
23											
24											
25											
26											
Total	0	16	119	166	108	63	5	0	0	0	477

2005											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13	1	1	1								3
14		18	4	7	4						33
15		53	34	41	12						140
16		14	50	69	30	11	2				176
17		4	35	62	36	8	6				151
18			8	49	37	16	5	1			116
19				2	9	2	4				17
20											
21											
22											
23											
24											
25											
26											
Total	1	90	132	230	128	37	17	1	0	0	636

Table 6 (continued):

2006											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13		5	3	2	1						11
14	1	2	5	4	4						16
15		22	27	13	20	3	1				86
16		22	39	42	33	8	1				145
17		11	35	31	33	14	2	2			128
18		1	18	44	35	9	3				110
19				13	17	11	3	2			46
20					5	3	5				13
21								1			1
22											
23											
24											
25											
26											
Total	1	63	127	149	148	48	15	5	0	0	556

2007											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12		2	1	2							5
13	1	6	3		1	1					12
14	1	17	12	6	3	2					41
15	2	51	48	15	13	6					135
16		48	71	55	22	21	1			1	219
17		10	48	48	32	27	6				171
18	1	3	12	31	30	27	6	3			113
19	1	1	1	9	22	21	9				64
20				1	2	3	2	1	1		10
21		1	1								2
22						1					1
23											
24											
25											
26											
Total	6	139	197	167	125	109	24	4	1	1	773

2008											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12		1	2	1							4
13		4	17	6	1						28
14		4	55	26	2						87
15		9	93	19	6	2					129
16	1	8	84	36	4	4	1				138
17		1	73	43	16	6	2				141
18			33	37	7	10	2	1			90
19			9	7	10	5					31
20			3	3	2	3	1	2			14
21			1								1
22											
23			1								1
24											
25											
26											
Total	1	27	371	178	48	30	6	3	0	0	664

Table 6 (continued):

2009											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13											
14											
15		1									1
16			3	4							7
17	1	2	25	17	4	1					50
18		1	15	45	4	1	1				67
19			2	25	5	3	1				36
20				9	8	1					18
21				2	1	3	2	1			9
22		1						2			3
23											
24											
25											
26											
Total	1	5	45	102	22	9	4	3	0	0	191

2010											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12					1						1
13		1	9	11	4	1					26
14		4	18	15	12	1					50
15			3	15	5						23
16		2	11	22	4	2					41
17			5	18	9	1					33
18				12	18	3		1			34
19					6						6
20						1					1
21											
22											
23											
24											
25											
26											
Total	0	7	46	93	59	9	0	1	0	0	215

2011											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13	1	8	3								12
14		9	8	3	1						21
15		2	5	7	5		1				20
16		1	16	15	30	4	1	1			68
17		1	18	48	103	22	3	1			196
18		1		21	140	91	15	1			269
19			2	4	29	54	9				98
20					6	9	2				17
21				1		1					2
22											
23											
24											
25											
26											
Total	1	22	52	99	314	181	31	3	0	0	703

Table 6 (continued):

2012											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13		3	1		1	1					6
14	1	15	16	5	1		1				39
15		29	47	14	9	5	2				106
16		7	55	37	21	12	6				138
17		3	24	69	60	49	10				215
18			4	23	39	96	31	1	1		195
19				1	6	17	18	2			44
20						1	2				3
21											
22			1								1
23											
24											
25											
26											
Totals	1	57	148	149	137	181	70	3	1	0	747

2013											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10			1								1
11											
12			1								1
13		6	1	3							10
14		31	17	1	2						51
15		53	61	21	6	1					142
16		15	67	34	11	5	2				134
17		5	28	40	18	5	4				100
18			4	16	10	5	3				38
19					2	2	1				5
20											
21											
22											
23											
24											
25											
26											
Totals	0	110	180	115	49	18	10	0	0	0	482

2014											
TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7	Age_8	Age_9	Age_10	Total
8											
9											
10											
11											
12											
13		5	6								11
14		17	47	7	1						72
15		18	96	23	1						138
16		7	177	66	10						260
17		3	55	40	10	3	2	1			114
18			6	5	3	2		1			17
19				1							1
20			1								1
21											
22											
23											
24											
25											
26											
Totals	0	50	388	142	25	5	2	2	0	0	614

Table 7: Commercial striped mullet *Mugil cephalus* catch-at-age and yield (females only)

	Commercial Catch-at-age (Females only)							
Year	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+	Yield (lbs)
1996	27,596	1,059,061	2,014,009	1,150,059	337,810	139,953	50,207	6,877,195
1997	32,981	949,646	1,822,990	1,072,076	309,034	132,590	41,343	6,304,535
1998	15,061	418,799	1,158,810	778,530	313,266	135,508	38,239	5,183,043
1999	16,408	475,931	1,426,793	1,069,842	522,937	215,276	83,930	7,562,303
2000	14,841	386,358	1,173,353	868,556	424,025	181,451	63,282	6,148,075
2001	10,031	286,125	834,342	539,097	209,687	98,324	29,004	3,630,090
2002	11,128	280,941	575,874	340,062	103,301	46,247	12,795	2,065,852
2003		184,808	661,712	746,976	480,586	103,494	72,363	3,812,451
2004		85,670	594,912	775,110	467,507	257,709	17,505	4,040,779
2005	155	90,796	120,895	210,659	118,861	33,797	16,838	1,010,220
2006	6,959	189,187	372,245	419,637	413,722	125,368	50,873	2,814,151
2007	5,804	126,563	167,946	138,093	104,322	89,399	25,515	1,150,464
2008	1,097	30,194	411,375	202,793	56,757	36,267	11,125	1,277,838
2009	318	1,309	15,998	36,317	8,342	3,058	1,649	155,582
2010		5,995	38,812	81,809	52,625	7,462	1,148	297,373
2011	957	22,112	47,793	85,007	260,559	147,426	28,651	1,210,446
2012	713	44,590	112,457	123,698	119,838	164,345	68,418	1,196,454
2013		77,625	119,338	74,023	29,762	10,246	5,875	484,546
2014		48,515	392,793	146,378	27,019	6,090	4,686	974,181

Table 8: Mean weight-at-age (pounds) of commercial striped mullet *Mugil cephalus* landings (females only).

	Commercial Mean Weight-at-age (Females only)						
Year	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+
1996	1.43	1.23	1.39	1.52	1.83	1.84	2.05
1997	1.43	1.30	1.41	1.49	1.73	1.74	1.86
1998	1.47	1.56	1.77	1.87	2.05	2.02	2.06
1999	1.50	1.62	1.89	2.04	2.27	2.25	2.63
2000	1.49	1.67	1.89	2.02	2.24	2.23	2.49
2001	1.45	1.58	1.78	1.86	2.02	1.97	1.98
2002	1.45	1.40	1.49	1.54	1.69	1.71	1.70
2003		1.35	1.53	1.69	1.87	2.14	2.31
2004		1.43	1.62	1.87	2.00	2.04	2.66
2005	0.89	1.31	1.61	1.75	1.89	1.99	2.15
2006	1.10	1.42	1.62	1.83	1.89	2.12	2.41
2007	1.51	1.41	1.58	1.80	1.97	2.04	2.39
2008	1.60	1.29	1.60	1.76	2.01	2.19	2.39
2009	1.89	2.07	2.01	2.33	2.62	2.79	3.09
2010		1.21	1.30	1.56	1.82	1.81	2.36
2011	0.89	1.15	1.57	1.87	2.08	2.33	2.28
2012	1.10	1.30	1.54	1.83	1.96	2.12	2.26
2013		1.27	1.50	1.67	1.77	1.88	1.89
2014		1.29	1.52	1.65	1.80	2.12	2.05

Table 9: Probabilities of age given length for age assignments of female striped mullet *Mugil cephalus* catches from the LDWF fishery-independent marine gillnet survey

TL_in	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+
6	1.00	0.00	0.00	0.00	0.00	0.00	0.00
7	1.00	0.00	0.00	0.00	0.00	0.00	0.00
8	1.00	0.00	0.00	0.00	0.00	0.00	0.00
9	1.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	1.00	0.00	0.00	0.00	0.00	0.00
11	0.00	1.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.81	0.19	0.00	0.00	0.00	0.00
13	0.00	0.01	0.96	0.03	0.00	0.00	0.00
14	0.00	0.00	0.69	0.30	0.01	0.00	0.00
15	0.00	0.00	0.07	0.74	0.17	0.02	0.00
16	0.00	0.00	0.00	0.31	0.48	0.16	0.05
17	0.00	0.00	0.00	0.02	0.31	0.34	0.33
18	0.00	0.00	0.00	0.00	0.05	0.20	0.76
19	0.00	0.00	0.00	0.00	0.00	0.04	0.96
20	0.00	0.00	0.00	0.00	0.00	0.00	1.00
21	0.00	0.00	0.00	0.00	0.00	0.00	1.00
22	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Table 10: Annual female striped mullet *Mugil cephalus* catch-at-size of the “old” time-series derived from the LDWF fishery-independent marine gillnet survey

TL_in / Year	1996	1997	1998	1999	2000	2001	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
5	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.
7	2	2	6	8	2	63	16	20	3	5	8	8	19	7	9	24	6
8	25	32	43	94	26	124	87	83	32	52	119	99	63	30	103	87	50
9	16	23	43	47	27	37	37	47	23	38	47	57	23	21	75	24	23
10	24	91	88	42	97	111	46	96	65	106	103	83	58	66	206	35	40
11	16	179	44	38	58	87	23	66	43	63	84	50	37	57	91	25	42
12	21	298	56	56	64	60	26	26	58	94	49	53	62	35	97	36	43
13	23	156	57	30	54	17	35	23	36	62	31	30	31	14	28	29	13
14	13	75	37	15	45	10	36	14	25	41	25	20	13	11	10	14	4
15	9	37	14	6	37	9	22	8	18	20	15	15	4	2	8	9	3
16	5	30	19	4	23	3	8	2	24	3	.	4	1	1	3	7	1
17	1	20	19	1	3	1	.	.	13	2	1	.	1	.	.	2	.
18	1	3	2	.	1	.	3	.	4	2	1	1	.	1	.	.	.
19	.	1	1	1	1	.	.	.	1	.	.	.	.	.	.	.	.
20	1	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.
21	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Totals	156	946	428	343	438	521	339	386	344	486	483	419	312	243	630	292	227

Table 11: Annual female striped mullet *Mugil cephalus* catch-at-size of the "new" time-series derived from the LDWF fishery-independent marine gillnet survey

TL_in / Year	2010	2011	2012	2013	2014
5	.	.	.	.	.
6	.	.	.	.	.
7	19	45	17	2	8
8	153	146	83	14	43
9	97	46	47	16	17
10	254	72	82	46	32
11	111	55	62	64	25
12	116	76	63	53	37
13	32	67	29	31	26
14	13	39	13	16	18
15	9	25	3	10	9
16	5	10	2	5	2
17	.	3	1	.	.
18	.	1	.	.	.
19	1	.	.	.	.
20	.	.	.	.	.
21	.	.	1	.	.
22	.	.	.	.	.
Totals	811	585	402	257	217

Table 12: Annual female striped mullet survey age composition and sample sizes of the "old" and "new" time-series derived from the LDWF fishery-independent marine gillnet survey

Year	"Old" IOA								"New" IOA							
	n	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+	n	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+
1996	156	0.27	0.37	0.23	0.08	0.03	0.01	0.01	--	--	--	--	--	--	--	--
1997	946	0.06	0.54	0.28	0.07	0.03	0.01	0.01	--	--	--	--	--	--	--	--
1998	428	0.21	0.41	0.21	0.07	0.04	0.02	0.02	--	--	--	--	--	--	--	--
1999	343	0.44	0.36	0.15	0.03	0.01	0.00	0.01	--	--	--	--	--	--	--	--
2000	438	0.13	0.47	0.22	0.11	0.04	0.01	0.01	--	--	--	--	--	--	--	--
2001	521	0.43	0.47	0.07	0.02	0.01	0.00	0.00	--	--	--	--	--	--	--	--
2002	339	0.41	0.27	0.19	0.09	0.02	0.01	0.01	--	--	--	--	--	--	--	--
2003	386	0.39	0.47	0.10	0.03	0.01	0.00	0.00	--	--	--	--	--	--	--	--
2004	344	0.17	0.45	0.19	0.09	0.06	0.03	0.03	--	--	--	--	--	--	--	--
2005	486	0.19	0.50	0.22	0.06	0.01	0.00	0.00	--	--	--	--	--	--	--	--
2006	483	0.36	0.47	0.12	0.04	0.01	0.00	0.00	--	--	--	--	--	--	--	--
2007	419	0.39	0.42	0.13	0.05	0.01	0.00	0.00	--	--	--	--	--	--	--	--
2008	312	0.34	0.46	0.16	0.03	0.00	0.00	0.00	--	--	--	--	--	--	--	--
2009	243	0.23	0.62	0.12	0.02	0.00	0.00	0.00	--	--	--	--	--	--	--	--
2010	630	0.30	0.60	0.08	0.02	0.00	0.00	0.00	811	0.33	0.57	0.08	0.02	0.01	0.00	0.00
2011	292	0.46	0.30	0.16	0.05	0.02	0.01	0.00	585	0.41	0.32	0.18	0.06	0.02	0.01	0.00
2012	227	0.35	0.51	0.11	0.02	0.00	0.00	0.00	402	0.36	0.48	0.12	0.02	0.01	0.00	0.00
2013	--	--	--	--				--	257	0.12	0.59	0.20	0.06	0.02	0.00	0.00
2014	--	--	--	--				--	217	0.31	0.40	0.21	0.06	0.01	0.00	0.00

Table 13: Summary of objective function components and negative log-likelihood values of the ASAP base model

Objective function =1423			
Component	**Lambda**	**ESS**	**Obj_fun**
Catch_Fleet_Total	1		-43
Index_Fit_Total	2		-3
Catch_Age_Comps		775	1187
Index_Age_Comps		220	289
Recruit_devs	1		-8

Table 14: Annual female striped mullet abundance-at-age and stock size estimates from the ASAP base model

Year	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+	Totals
1996	11,495,300	8,172,360	5,750,460	2,521,670	811,684	298,968	132,562	29,183,004
1997	9,439,050	6,994,350	5,085,360	2,400,530	765,785	240,442	130,347	25,055,864
1998	7,570,820	5,744,050	4,360,080	2,146,910	742,680	231,322	114,268	20,910,130
1999	8,675,360	4,616,190	3,668,270	2,144,590	855,004	292,517	138,981	20,390,912
2000	7,784,060	5,275,750	2,853,670	1,469,010	608,065	235,647	121,249	18,347,451
2001	7,219,040	4,731,270	3,240,640	1,097,560	389,623	156,237	93,484	16,927,854
2002	6,405,810	4,399,100	2,999,610	1,522,410	405,150	141,693	92,738	15,966,511
2003	3,968,310	3,912,350	2,867,760	1,680,430	751,733	200,029	118,358	13,498,970
2004	3,831,430	2,418,510	2,484,460	1,361,180	630,952	278,312	120,376	11,125,220
2005	3,795,630	2,332,130	1,512,020	1,068,320	434,100	196,770	126,801	9,465,771
2006	7,482,730	2,320,790	1,541,540	924,681	609,761	249,572	190,336	13,319,410
2007	6,305,380	4,554,730	1,451,360	664,116	295,818	190,787	140,553	13,602,744
2008	3,784,570	3,852,620	2,984,580	840,040	346,092	154,564	177,125	12,139,591
2009	3,965,530	2,313,760	2,543,040	1,809,210	472,532	195,951	192,407	11,492,430
2010	4,715,380	2,429,050	1,563,890	1,790,740	1,303,640	347,051	292,419	12,442,170
2011	7,993,870	2,887,800	1,637,830	1,084,470	1,257,990	932,253	468,594	16,262,807
2012	14,615,200	4,891,490	1,926,970	1,063,320	683,241	802,346	914,009	24,896,576
2013	6,161,730	8,942,840	3,262,850	1,248,270	667,475	434,101	1,117,760	21,835,026
2014	6,341,930	3,773,220	6,022,740	2,245,700	866,114	471,151	1,125,370	20,846,225

Table 15: Annual female striped mullet age-specific, apical, and average fishing mortality rates estimated from the ASAP base model

Year	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6	Age_7+	Fmult	Avg. F
1996	0.01	0.08	0.53	0.88	0.93	0.93	0.93	0.93	0.25
1997	0.01	0.08	0.52	0.86	0.91	0.91	0.91	0.91	0.26
1998	0.00	0.06	0.37	0.61	0.64	0.64	0.64	0.64	0.19
1999	0.01	0.09	0.58	0.95	1.00	1.00	1.00	1.00	0.29
2000	0.01	0.10	0.62	1.02	1.07	1.07	1.07	1.07	0.26
2001	0.01	0.07	0.42	0.69	0.72	0.72	0.72	0.72	0.17
2002	0.00	0.04	0.24	0.40	0.42	0.42	0.42	0.42	0.11
2003	0.01	0.06	0.41	0.67	0.70	0.71	0.71	0.71	0.25
2004	0.01	0.08	0.50	0.83	0.88	0.88	0.88	0.88	0.32
2005	0.00	0.02	0.15	0.25	0.26	0.26	0.26	0.26	0.08
2006	0.01	0.08	0.50	0.83	0.87	0.88	0.88	0.88	0.20
2007	0.00	0.03	0.21	0.34	0.36	0.36	0.36	0.36	0.07
2008	0.00	0.03	0.16	0.27	0.28	0.28	0.28	0.28	0.08
2009	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.01
2010	0.00	0.00	0.03	0.04	0.05	0.05	0.05	0.05	0.02
2011	0.00	0.01	0.09	0.15	0.16	0.16	0.16	0.16	0.05
2012	0.00	0.01	0.09	0.16	0.16	0.16	0.16	0.16	0.03
2013	0.00	0.01	0.03	0.06	0.06	0.06	0.06	0.06	0.02
2014	0.00	0.01	0.05	0.08	0.08	0.08	0.08	0.08	0.03

Table 16: Limit reference point estimates for the Louisiana striped mullet stock. Spawning stock units are eggs x 10^{12}. Fishing mortality units are yr^{-1}

Reference Points		
Parameter	Derivation	Value
SPR_{limit}	RS 56:333	30%
$F_{30\%SPR}$	Equation 38 and SPR_{limit}	0.15
$SS_{30\%SPR}$	Equation 38 and SPR_{limit}	2.66

Table 17: Sensitivity analysis table. Current estimates are geometric means of 2012-2014 estimates. Yield units are pounds (x10^3), fishing mortality units are yr^{-1}, and spawning stock units are eggs x 10^{12}

Model run	negLL	$Yield_{30\%SPR}$	$F_{30\%SPR}$	$SS_{30\%SPR}$	$F_{current}/F_{30\%SPR}$	$SS_{current}/SS_{30\%SPR}$
Base Model	1423.1	2,695	0.15	2.66	0.17	1.85
h=.9	1422.7	2,644	0.15	2.61	0.17	1.85
h=.8	1422.2	2,572	0.15	2.54	0.18	1.86
h=.7	1421.6	3,088	0.15	2.97	0.18	1.69
Yield lambda (x5)	1248.8	2,766	0.15	2.73	0.16	1.91
Survey lambda (x5)	1377.4	3,242	0.15	3.20	0.16	2.19

VII. To consider a Notice of Intent to modify Greater Amberjack commercial trip limits and recreational size limits

Jason Adriance, LDWF Marine Fisheries

The changes in the Notice of Intent are reflective of the Federal regulations already in place

Q. Commissioner Hebert, is this for recreational anglers; what is the biological reasoning?

A. Jason Adriance, current limit about 11% reach sexual maturity – with the new regulations it bumps it up to 85%

MOTION by Commissioner Broussard

Commissioner Manuel seconded the motion made by Commissioner Broussard

Vice Chairman Yakupzack called for Public Comments

There were no comments heard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

(The Full Text of the Notice of Intent is Made a part of the Record)

NOTICE OF INTENT - Reef Fish – Harvest Regulations (LAC 76:VII.335)

The Wildlife and Fisheries Commission does hereby give notice of intent to amend a Rule (LAC 76:VII.335) modifying existing reef fish harvest regulations. Proposed changes decrease the daily trip limit of commercially harvested greater amberjack from 2,000 pounds to 1,500 pounds and increase the recreational minimum size limit of greater amberjack from 30 to 34 inches fork length. Authority for amendment of this Rule is included in the Administrative Procedure Act, R.S. 49:950 et seq., and through the authority granted in R.S. 56:6(25)(a), 56:320.2, 56:326.1, and 56:326.3 to the Wildlife and Fisheries Commission.

Title 76 WILDLIFE AND FISHERIES

Part VII. Fish and Other Aquatic Life

Chapter 3. Saltwater Sport and Commercial Fishery

§335. Reef Fish - Harvest Regulations

A – D 7. …

D 8. Commercial Trip Limits shall include those limits listed below. For the purposes of this rule, a trip is defined as a fishing trip, regardless of the number of days duration, that begins with departure from a dock, berth, beach, seawall or ramp and that terminates with return to a dock, berth, beach, seawall or ramp.

Species or Group	Trip Limit
a. Gray Triggerfish	12 fish
b. Greater Amberjack	2,000 pounds1,500 pounds

E. Recreational and commercial minimum and maximum size limits, unless otherwise noted

	Minimum Size Limits
1. Red snapper	16 inches total length (Recreational) 13 inches total length (Commercial)
2. Gray, yellowtail, and cubera snapper	12 inches total length
3. Lane snapper	8 inches total length
4. Mutton snapper	16 inches total length
5. Vermilion snapper	10 inches total length
6. Red grouper	20 inches total length (Recreational) 18 inches total length (Commercial)
7. Yellowfin grouper	20 inches total length
8. Gag grouper	22 inches total length
9. Black grouper	22 inches total length (Recreational) 24 inches total length (Commercial)
10. Scamp	16 inches total length
11. Greater amberjack	30 34 inches fork length (Recreational) 36 inches fork length (Commercial)
12. Hogfish	12 inches fork length
13. Banded rudderfish and lesser amberjack	14 inches fork length (minimum size) 22 inches fork length (maximum size)
14. Gray triggerfish	14 inches fork length

F - J. …

AUTHORITY NOTE: Promulgated in accordance with R.S.56:6(25)(a), R.S. 56:320.2(C), R.S. 56:326.1 and R.S. 56:326.3.

HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 16:539 (June 1990), amended LR 19:1442

(November 1993), LR 20:797 (July 1994), LR 21:1267 (November 1995), LR 22:860 (September 1996), LR 24:1138 (June 1998), LR 24:1139 (June 1998), LR 24:1972 (October 1998), LR 26:793 (April 2000), LR 26:1505 (July 2000), LR 26:2833 (December 2000), LR 31:3166 (December 2005), LR 33:1156 (June 2007), repromulgated LR 33:1397 (July 2007), amended LR 34:2209 (October 2008), LR 34:2682 (December 2008), LR 36:1791 (August 2010), LR 38: 2383 (September 2012), LR 39:330 (February 2013), LR 40:95 (January 2014), repromulgated LR 40:1116 (June 2014), LR 40:2281 (November 2014), LR 42:____.

The secretary of the Department of Wildlife and Fisheries is authorized to take any and all necessary steps on behalf of the Commission to promulgate the effectuate this notice of intent and the final rule, including but not limited to, the filing of the fiscal and economic impact statements, the filing of the notice of intent and final rule and the preparation of reports and correspondence to other agencies of government.

Interested persons may submit comments relative to the proposed Rule to Jason Adriance, Fisheries Division, Department of Wildlife and Fisheries, Box 98000, Baton Rouge, LA 70898-9000, or via e-mail to jadriance@wlf.la.gov prior to Thursday, April 7, 2016.

Family Impact Statement

In accordance with Act 1183 of 1999 regular session of the Louisiana Legislature, the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission hereby issues its Family Impact Statement in connection with the preceding Notice of Intent. This Notice of Intent will have no impact on the six criteria set out at R.S. 49:972(B).

Poverty Impact Statement

The proposed rulemaking will have no impact on poverty as described in R.S.49:973.

Provider Impact Statement

This Rule has no known impact on providers as described in HCR 170 of 2014

VIII. To hear a presentation on the recommendations of the Oyster Lease Moratorium Lifting Committee
John Tesvich, Chairman, Louisiana Oyster Taskforce

There are roughly 8040 private water-bottom leases in Louisiana totaling around 400,000 acres

La. oyster leases are valid for 15 years after which the owner has the first right of refusal. The annual rental is $3.00 per acre

In the 1990's oyster lease owners filed class action lawsuits against the state for damages due to the operation of fresh water diversions. The damage claims were subsequently dismissed by the LA Supreme Court

The WLF Commission imposed a moratorium on new oyster leases in March of 2002 due to the state's concern over conflicts with the state's burgeoning coastal restoration initiatives

Subsequently, changes made in the lease document and legislative changes protected the state from future liability

The state legislature passed Act 808 in 2008 that set up a moratorium lifting committee comprised of oystermen along with oil and gas representatives and private wetland owners to recommend changes to future oyster leases in Louisiana

Oil & gas representatives want more protection from damage claims from oyster lease-owners

The lawsuits for damages to oyster leases filed after the BP oil spill and conflicting interests of other stakeholders in the wetlands has thwarted efforts to lift the moratorium

Future coastal restoration projects in the state will very likely dramatically change the environmental conditions in the current oyster growing regions. The scope and impacts of future projects on oyster culture is still undefined. This makes decisions on locating potential sites for new oyster more leases risky

Oyster Lease Moratorium Lifting Recommendations - Approved by the Louisiana Oyster Task Force

Recommendation 1: Change requirements for oyster lease bottom assessments conducted for Coastal Use Permit applications to keep them current; requiring re-assessments within 2 years or upon request by oyster lease owner with substantiation

Recommendation 2a: New oyster applications are to be posted on a public website. Allow landowners 90 days to protest the issuance of a new oyster lease application during which time the Office of State Lands would reevaluate ownership upon protest After 90 days, and/or approval by State Lands after protest, the application would be processed by LDWF and oyster lease issued

Recommendation 2b: Allow oyster lease applicant 120 days after the website posting, or 30 days after resolution from the State Lands Administrator, to withdraw his application and receive a full refund

Recommendation 3: Oyster leases cancelled due to non-payment shall be removed from the record and the area of water bottoms will become available for a new lease application

Recommendation 4: Amend statute to exempt oil and gas operator from damage liability if oil and gas CUP predates new oyster lease applications, provided that the operator does not violate the prescriptions in the CUP. And provide for limited liability for oil and gas assets that predate the oyster lease application within prescribed buffer zones and access channels where applicable. Leases reissued prior to this statutory change and those pursuant to section 2.B of Act 808 would not be subject to this provision

Recommendation 5: Before general lifting of the moratorium to allow pre-existing lease-owners to expand their leases up to 500 feet in cases where a lease formerly abutted a shoreline and the shore-line has receded over time. Also, in cases where there is 500 feet or less between two or more oyster leases, the lease-owners will be allowed to take up additional area by agreeing to split the distance equally, or if one lease-owner declines the other(s) may take up the area. The newly added water-bottom would be subject to the provisions of Recommendation 4

Recommendation 6: Initial applications for oyster leases post moratorium shall be by appointments assigned via lottery system developed by LDWF. (Each appointment = one application within the current rules for oyster leases applications)

Recommendation 7: Request that the CPRA annually provide updated maps to the DWF and the LOTF, for reference purposes only, that will depict areas of coastal water-bottoms where projected salinity changes due to coastal restoration projects will likely negatively impact the cultivation of oysters. This would apply to the cumulative effects of all existing river diversions and planned river diversions in a five, ten, and twenty year time-frame

Recommendation 8 (a): In reference to the issue of dual-claimed water-bottoms of the State, it is the general position of the committee that lifting the moratorium should not be held up because of this issue. Dual-claimed water-bottoms is a legal issue with prescriptions for adjudication already provided for, and suggesting to change anything with that is beyond the scope of this committee

Recommendation 8 (b)): The committee recommends that prior to implementing the lottery phase, private landowners or their agent(s) would have first right of refusal to apply for an oyster lease in cases where they have actively engaged in the cultivation and legal harvest of oysters on what was initially private property, and which subsequently was deemed by the State lands Office to be state owned water-bottoms. The private oyster lessee shall be required to have had a valid private oyster lease recorded with the Clerk of Courts in the appropriate jurisdiction prior to July 1, 2015. Provisions prescribed under Recommendation 5 would supersede this provision

Recommendation 9: Oyster lease owners that had leases cancelled by the state due to coastal restoration projects shall have first right of refusal in cases where the previously leased area is determined to be currently leasable. The lease-owners that had dropped their leases due to the lawsuits surrounding the freshwater impacts of the Caernarvon Diversion, and other coastal restoration projects shall have the first right of refusal to reapply for their original water-bottom of the pre-existing lease. These leases shall not be subject to provisions under Recommendation 4

Q. Commissioner Manuel, Is there a restriction to sub-leasing? Is it allowed?

A. John Tesvich, yes, sub-leasing is allowed as it has never come up

Q. Commissioner Broussard, Who sets the rate?

A. John Tesvich, set by statute

C. Commissioner Broussard, Leases are not handled by LDWF

C. John Tesvich, We have never had a situation with sub-leasing. It has never come up

C. Frederick Whitrock, LDWF does not recognize sub-leasing

Q. Commissioner Broussard, Is sub-leasing contractually forbidden?

A. Frederick Whitrock, We do not prohibit it

Q. Commissioner Manuel, Are you willing to prohibit it?

Q. Commissioner Broussard, Is that written in the Audit Findings?

C. Randy Pausina, In the Audit report there was a comment about the "sale of"

IX. To consider a Resolution confirming Louisiana's jurisdiction over Reef Fish Management between three and nine nautical miles, as recognized by the U.S. Congress, and clarifying gear restrictions, methods of take and licensing in these waters
Cole Garrett, LDWF Attorney

To confirm Louisiana's jurisdiction over Reef Fish Management between three and nine nautical miles as recognized by the U.S. Congress, and clarify applicable gear restrictions, methods of take, and licensing requirements in these waters.
The Louisiana Legislature passed Act 336 of the 2011 Regular Legislative Session recognizing Louisiana's historical boundary at three marine leagues (nine (9) nautical miles), but specifically included the caveat that, "the jurisdiction of the state of Louisiana or any political subdivision thereof shall not extend to the boundaries recognized herein until the U.S. Congress acknowledges the boundary described herein by an Act of Congress…"

On June 8, 2012, the Louisiana Wildlife and Fisheries Commission relied on that Act and took action to extend jurisdiction of state territorial waters for the purposes of all fisheries management to three marine leagues (nine (9) nautical miles).

On December 18, 2015, the One Hundred Fourteenth Congress of the United States passed the Consolidated Appropriations Act, which granted management authority of reef fish resources to the gulf states out to nine (9) miles by stating, "Notwithstanding any other provision of law, for the purpose of carrying out activities pursuant to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico or any amendment to such Plan, the seaward boundary of a coastal State in the Gulf of Mexico is a line 9 nautical miles seaward from the baseline from which the territorial sea of the United States is measured."

Vice Chairman Yakupzack called for Public Comments

S. Kindra Arnneson Commercial Reef Fisherman

Under the impression this affected recreational fishing only and would not affect the commercial sector in any way. Found out three weeks ago that this new boundary line would make the commercial bandit gear illegal in the three to nine miles of state water. Found the legislation and made phone calls. Was told by LDWF Enforcement and LDWF Fisheries Biologist that "we would have to just roll with the punches and accept the change"– further stated "we would have to use hand lines and these long lines to land snapper and amberjack". It is humanly impossible to hand line an amberjack due to the sheer size. Reached out to the new Secretary, Charles Melancon – "thankful he was able to answer all of my questions" and try to resolve my issues. This would literally shutdown our ability to land these commercial reef fish in the state of Louisiana. I was told that this would "only affect a few fishing families on the southeast side of Louisiana so why should someone from LDWF bother with this". This doesn't just affect us. As you are aware, we have restaurants, trucks, cutting houses, etc., and we must not ever forget these jobs. We are the ones that represent the public's rights of this access to this resource. The numbers are roughly less than 10 percent of Americans own a recreational vessel. That means that 90% of Americans can only access this product of protein through the commercial fisheries. I'm here today because this was an unintended consequence. I've been in the reef fish industry for over 17 years and the commercial fisheries industry for 26 years. A problem we have is a lot of fishermen don't see beyond the dock. We are a lot more organized now but we still do not have a Finfish Taskforce which is a serious problem. If there were a Taskforce in place, this problem would have been brought to the table before a fishery was almost shutdown off the coast with no economic impact study of any kind. We weren't even thought of with a law that was not even supposed to affect the commercial sector in any way shape or form – but yet we were. Had I not received a phone call, this could have just rode and went forward and we would have been shut down. What this law did, without you voting and letting this happen today is it made what we do illegal. It made us all criminals. That is unacceptable. We have to consider who has the right to access this resource. Is it just a few of the elite with soft hands that are able to pay for a recreational vessel or is it the ones – 90 percent of Americans? That's who we represent.
I absolutely support this resolution.

With Legal in the room, I called yesterday and asked for a copy of the Resolution so that I would not have to put my life completely on hold to drive a total of six hours to come here today and get in your hair. I was told by your legal "it wasn't legal for them to release this to me". How are we supposed to know that we need to come up here and

represent ourselves if we can't have access to a Resolution before it comes in front of you?"

C. Vice Chairman Yakupzack, I am happy to yield to legal to answer your question, but the proper public notice is by virtue of the Agenda which goes out three days before the meeting. I will yield to legal as far as the backup documentation

C. Secretary Charlie Melancon, Apologized for the document getting out late as he has had Mr. Garrett assisting him with other issues (since he has come aboard). There was no intent to hide anything. When we last talked, he was committing to paper our conversation which is what I committed to what this agency was going to do on behalf of the fisheries.

C. Fred Whitrock, Legal, The issue is simply – this was not ready for release yesterday because it was still in draft form. We were still working on it and was not finalized form for the Commission until this morning. In terms of public records, these are documents prepared by us and offered at the Commission for their approval. It is the Commission to make the decision on whether to accept or not accept our language. Technically, we do not need… from a legal stand point we do not have to even put in writing to the Commission voting on them. This is only done as help to them obviously because they are complicated but they could easily come up and ask-propose the language up here and provide it out at which point it becomes public record. This case was a little different because we did not feel it was a final document from our prospective to give to the Commission until this morning and that was the reason it was not available. I received the email around 4 o'clock or so on whether this could be released. I felt because it was still a draft format it was not ready for release to the public.

Q. Kindra Arnnesen, In the future, are we as commercial fisheries going to be able to access anything that's going to be in a resolution that's going to be voted on so that we know whether or not we have to come up here?

A. Fred Whitrock, We will provide documents when they are in such form that they can be considered public records and released to the public. I'm not trying to be intentionally….but we don't know, that is something that is very fluid in terms of when that occurs. There is no specific date.

C. Kindra Arnnesen, We would really like to be a part of this process so that we can make sure that our fishery is sustainable and that we are not getting hit with some unintended consequence. That is why I came here today because these unintended consequences are true consequences for some and we cant do this.

C. Commissioner Hebert, You mentioned there is not a Finfish Taskforce but I believe one is being put in place or has been put in place, is that correct?

C. Cole Garrett, Finfish Taskforce does exist in statute however the composition has never been appointed. That is what we are waiting on is for the Governor's Office to appoint members to serve on that Taskforce.

Q. Kindra Arnneson, With all the fisheries under state management – if the state is acquired additional red snapper quota season via reef fish management, shouldn't the commercial sector get their share of that? Why hasn't this been considered?

A. Commissioner Broussard, We are still going with the federal quota. We have not changed anything in regards to issuing out quotas. We are still going to harvest the percentage of the ACL as issued by the feds.

Q. Kindra Arnneson, So we are still under the same quota as we were prior to the law?
A. Commissioner Broussard, Yes

MOTION by Commissioner Broussard

Commissioner Manuel seconded the motion made by Commissioner Broussard

There were no other comments heard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

(The Full Text of the Resolution is made a part of the Record)

RESOLUTION

To confirm Louisiana's jurisdiction over Reef Fish Management between three and nine nautical miles as recognized by the U.S. Congress, and clarify applicable gear restrictions, methods of take, and licensing requirements in these waters.

WHEREAS, the Louisiana Legislature passed Act 336 of the 2011 Regular Legislative Session recognizing Louisiana's historical boundary at three marine leagues (nine (9) nautical miles), but specifically included the caveat that, "the jurisdiction of the state of Louisiana or any political subdivision thereof shall not extend to the boundaries recognized herein until the U.S. Congress acknowledges the boundary described herein by an Act of Congress…"

WHEREAS, on June 8, 2012, the Louisiana Wildlife and Fisheries Commission relied on that Act and took action to extend jurisdiction of state territorial waters for the purposes of all fisheries management to three marine leagues (nine (9) nautical miles).

WHEREAS, on December 18, 2015, the One Hundred Fourteenth Congress of the United States passed the Consolidated Appropriations Act, which granted management authority of reef fish resources to the gulf states out to nine (9) miles by stating, "Notwithstanding any other provision of law, for the purpose of carrying out activities

pursuant to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico or any amendment to such Plan, the seaward boundary of a coastal State in the Gulf of Mexico is a line 9 nautical miles seaward from the baseline from which the territorial sea of the United States is measured."

WHEREAS, persons taking fish in Louisiana waters, whether recreationally or commercially, must be properly licensed.

WHEREAS, the Louisiana Legislature has authorized the Louisiana Wildlife and Fisheries Commission to set seasons, times, places, size limits, quotas, daily take, and possession limits for all wildlife and fish, but has retained the authority to regulate gear and methods of take.

WHEREAS the Louisiana Legislature has passed several laws regulating, restricting, or prohibiting certain gear or methods of take within the state territorial waters.

WHEREAS, the Wildlife and Fisheries Commission recognizes that the legislative intent when establishing gear restrictions and methods of take in LSA-R.S. 56:1, et seq. was for those restrictions to apply to the fisheries resources located within the territorial sea as it existed at the time those laws were passed, which is inside of three nautical miles.

WHERES, enforcing the restricted methods of take and gear restrictions for the harvest of reef fish in the manner that they have historically been enforced is beneficial to both the commercial industry and the recreational sector and not detrimental to the resource.

THEREFORE BE IT RESOLVED, that notwithstanding any previous resolutions, declarations, or actions taken to the contrary, the Wildlife and Fisheries Commission, in accordance with the laws of the State of Louisiana and the United States of America, hereby recognizes that Louisiana's jurisdiction over the management of reef fish resources, extends to a line nine (9) nautical miles seaward from the baseline from which the territorial sea of Louisiana is measured.

BE IT FURTHER RESOLVED, that the extension of Louisiana's jurisdiction for fisheries management applies only to those species in the management unit of the Reef Fish Fisheries Management Plan, including Snappers, Groupers, Tilefishes, Jacks, Triggerfishes, and Wrasses.

BE IT FURTHER RESOLVED, that the Wildlife and Fisheries Commission, instructs that enforcement agents of the Louisiana Department of Wildlife and Fisheries shall continue to enforce those gear restrictions and methods of take for reef fish resources within the three mile state offshore boundary as prescribed under Louisiana law and in accordance with departmental regulations, including but not limited to bandit and long line gear, but shall not enforce such restrictions in the portion of Louisiana territorial waters seaward of the three mile state offshore boundary as extended by this resolution to nine (9) nautical miles.

BE IT FURTHER RESOLVED that recreational take of reef fish with legal federal gear shall be allowed beyond the historical three mile territorial sea, out to the Congressionally recognized nine mile extended boundary, so long as that fisherman holds a valid Louisiana basic and saltwater fisherman's license along with the recreational offshore landing permit.

BE IT FURTHER RESOLVED, that federally permitted commercial take of reef fish with legal federal gear (including bandit and long line gear) shall be allowed beyond the historical three mile territorial sea, out to the Congressionally recognized nine mile extended boundary, so long as that fisherman holds a valid Louisiana commercial fisherman's license and is operating on a vessel with a proper Louisiana vessel license.

X. To hear an update on comments regarding the 2015-2016 and 2016-2017 General and WMA Hunting Seasons and Rules and Regulations, 2017 General and WMA Turkey Hunting Season and Rules and Regulations, and 2016-2017 Migratory Birds Regulations, Seasons, and Bag Limits Notice of Intent and to Consider any amendments thereto
Steve Smith WMA Program Manager, Wildlife Division

Presenting a Summary of comments received to date of the proposed Notice of Intent January 7 – February 3, 2016

WATERFOWL
3 Comments
1 – Support of Proposed Seasons
2 _ Not related to actual proposed seasons, just stating preferences (neither opposed to or in support of)

STATEWIDE DEER SEASONS and REGULATIONS
8 Comments
2 _ Opposed to moving former deer Area 5 into Area 1
1 _ In support of new deer Area 5
5 _ General Comments Preferences for Seasons and Regulations

WMA DEER SEASONS
2 Comments
2 _ General Comments Preferences for Seasons and Regulations

ELIMATE FERAL HOG/DOG SEASON (Richard Yancy/Beouf/DeweyWills WMA)

6 Comments
5 _ Opposed to proposed season elimination
1 _ In support of

PROPOSESD LIMITED ACCESS AREA (Dewey Wills WMA)
1 Comment - Opposed to the regulation

PROPOSED MOTOR RESTRICTION for PASS-A-LOUTRE WMA
9 Comments
4 _ Opposed to proposed restriction
5 _ In support of

GENERAL WMA RULES AND REGULATIONS
1 Comment
Not related to any proposed change, only stating a preference

Vice Chairman Yakupzack called for Questions

Q. Commissioner Manuel, Are we going to continue to receive those until when?

A. Steve Smith, You will receive up until the April Commission meeting

Q. Charles Williams, LA. Waterfowl Alliance
Long time hunters with 50 years' experience waterfowl hunting. Concerned about the future of waterfowl hunting; Dealing with some global factors with the climate change up north - In these adverse conditions we need to focus on sustainability.
Lessons can be learned from the three best hunting areas of the state – The mouth of the Mississippi River, Cameron Parish and Catahoula Lake. The Delta National Wildlife Refuge holds thousands of ducks -Cameron Parish well managed– Catahoula Lake has the National Wildlife refuge area. The use of refuges and rest areas for waterfowl in our WMAs to the point where we are hunting one hundred percent of the WMA's everyday seven days a week until 2:00pm. That is intense hunting pressure coupled with ATV Trails the ducks have no place to go, so they leave. That is what is happening in these areas and they go back to Arkansas. Arkansas has a more favorable climate, but they have a refuge in every single major WMA in the bottom land areas of eastern Arkansas. They regulate hunting pressures with limited access areas. They also have limitations on mode of transportation. Bouef WMA has 50 thousand acres owned by the agency since beginning in the mid 1960's. The opinion of us long time hunters that the decision about 10 years ago to shut down the refuge reduced hunting results there. It was once an excellent place for waterfowl and now is only mediocre. The shutdown was due to private blind owners at a nearby waterbody complained that the refuge was holding their ducks. Private blind owners got to benefit. The refuge area needs to be brought back. We believe the decision at Bouef and other places needs to be revisited. Other methods of controlling hunter pressure to sustain the resource should be a fundamental aspect of all the decisions in the WMA regulation of waterfowl hunting.

Q. Commissioner Manuel, You would like to see a rest area on every WMA?

A. Charles Williams, yes on all major WMA's

C. Commissioner Courville, There are 3 issues I would like us to consider: First, Would like us to consider….. Form of a Motion to amend the White Fronted Goose Season to add seven days and open November 5th – add that as part of the statewide spec season for the 2016-2017 season which would give us a full eighty eight days and two Spec limit. Right now we have eighty one and two.

Vice Chairman Yakupzack called for discussion

C. Fred Whitrock, Point of Order. This is not an action item at this time. You need to give opportunity for this Notice of Intent … next month then trying to put a new agenda item on. You can get with Mr. Smith to add the new agenda item

C. Commissioner Courville, It says we can consider any amendments on Item 10.

C. Fred Whitrock, this is just an update on comments. Not to propose any amendments to this NOI for this meeting.

C. Commissioner Courville, I guess we can do it next month, but that is my intent to make that motion. We can do it now or later.

C. Fred Whitrock, You need to give the proper amount of time and work, you can get with Mr. Smith and you could….schedule it as an amendment for next month. Next month you will consider amendments and in April you will actually…you conditionally adopt amendments next month.

C. Commissioner Broussard, as it went out on the agenda, the general public probably wasn't prepared for adjustments at this meeting.

C. Tommy Tuma, Mr. Chairman, we as a department would prefer to have this amendment in for the public hearing period so we can gather public comment. This allows us to better collect input from the public.

C. Commissioner Courville, I agree. With that I would like to make a motion to amend the agenda.
Commissioner Broussard seconded the motion by Commissioner Courville.

A Roll call vote was conducted by Wendy Brogdon. All Commissioners voted in favor of the Motion to amend the agenda

MOTION by Commissioner Courville

Consider adding agenda item 10b for the "Consider adding seven days to the White Fronted Goose Season which would have it opening November 5th statewide Spec Season for the 2016-2017 season which would be 88 days to 2 geese

Commissioner Manuel seconded the motion made by Commissioner Courville

There were no other comments heard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

MOTION by Commissioner Courville to adopt the Motion

Commissioner Manuel seconded the motion made by Commissioner Courville

There were no other comments heard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

C. Commissioner Manuel, by adding these motions, are we limiting anything in the future for the final deal?

C. Steve Smith, correct you still have until the April meeting

Proceeding with Item 10a.

Q. Commissioner Courville, Feral Hog Season with Dogs – When were these dogs allowed on the WMA's and what was the original intent of that program?

A. Steve Smith, the February Hog Dog Season is the only opportunity to engage in this activity. This began in the year 2006 – offered this season on two WMA's; Pearl River and what was formerly Red River / Richard K. Yancey. These seasons have expanded overtime until the present. Currently we have 12 areas: Bouef and Dewey Wills were added to that expansion in 2009; The original reason was an experimental season for the purpose of population control on these areas.

Q. Commissioner Courville, Do you feel like there is any success – do you have any data on how many have been removed last year; do you think we are achieving our original objective?

A. Steve Smith, We have harvest data, the levels of known harvest are generated through our self-clearing permit system as well as reports that are turned in. We also issue permits for live transport on these areas. Reports are required at the end of the year. We know what is reported, what is removed live from our WMA's and we know what is harvested through the self-clearing permit system. We do not consider that to be an adequate number of animals to constitute sufficient population control.

Q. Commissioner Courville, on all of the WMA's they are allowed to remove some of these hogs alive?

A. Steve Smith, on the ones where this season is offered – there are 12 WMA's where this season is offered right now. Should they choose to do so, they can request a permit from a field office for live transport. The permit is issued to whoever requests it along with 5 tags to remove 5 individuals. It's an ear tag – they have to tag the hog before they remove it from the catch site. They are required per the permit to turn in a report at the end of the year indicating what WMA's they caught the hogs on, how many and where they took them.

Q. Commissioner Courville, do they have to report if it was slaughtered at some point?

A. Steve Smith, no – the end result is the facility it goes to (holding pen or facility)

Q. Commissioner Courville, the February timeframe – are we having an issue with these hog dogs and bear cubs and females on these three WMA's?

A. Steve Smith, yes; these three WMA's have bear populations on them – we do have concerns over adverse impacts particularly females with cubs due to this activity this time of year. The cubs are newborn first year cubs. There are concerns over liter abandonment and stress to the females with cubs

Q. Commissioner Courville, during the February time period, on those three WMA's…are there any other dogs allowed in the pursuit of any other game during this time period and if so what is that game and do you think you will have a similar conflict with the bear cubs and the females?

A. Steve Smith, we also allow beagles for rabbits and dogs for squirrels during that time of year on almost all of our WMA's. Yes, that activity is allowed on these same WMA's that time of year however we do not feel that activity as opposed to hog dog activity which are catch and bait dogs constitutes the same threat and concerns for the female black bears. The amount of use on WMA's between the two activities; the small game hunters are usually half the amount of use as the hog dog hunter.

Q. Commissioner Courville, how many people use those WMA's for hog dogging?

A. Steve Smith, yes; in the month of February on the three WMA's – Self Clearing Permit Data over the last three years:
Richard K Yancey – Low 722 User days – on any one given day to a high of 909
Boeuf – Low of 135 User days – to a high of 164
Dewey Wills – Low of 131 User days – to a high of 192

Pearl River Management Area – Low of 502 User days to a high of 830

Q. Chad Courville, Pass-A-Loutre Motor Restriction – only Atchafalaya Delta and Pass-A-Loutre are the only two WMA's that have an all-day opportunity?

A. Todd Baker, those two and Biloxi WMA - Biloxi has 25hp long tail restriction

C. Commissioner Courville, Pass-A-Loutre has the better success ratio than most of the coastal WMA's – do we have a waterfowl pressure issue on the coastal WMA's; it appears we have tried to address that on other WMA's with a 2 o'clock closure. Has this been adequately evaluated as compared to a motor restriction on just one WMA?

C. Todd Baker, Since the 90's we've attempted twice to put a closure on Atchafalaya Delta and Pass-A-Loutre WMA's and both times that measure failed due to public outcry. It has been addressed twice and not passed.

C. Commissioner Courville, the feedback I've received is that it may be becoming acceptable – is this the sense from some of the comments that you've received?
It appears to me that we have a bigger pressure issue at Atchafalaya Delta.
If this motor restriction makes the most sense, it would seem appropriate to do that on both or if the public has now found it digestible to do a 2 o'clock closure – maybe that's a more appropriate way to addressing some of the concerns. This is going to be an enforcement nightmare.
Is there a better way to do this then what we are proposing? We need to at least consider and/or look at during the public comment period or through staff. Something is just not right with this. We need to look at the true issue and alternate ways of addressing the issue.

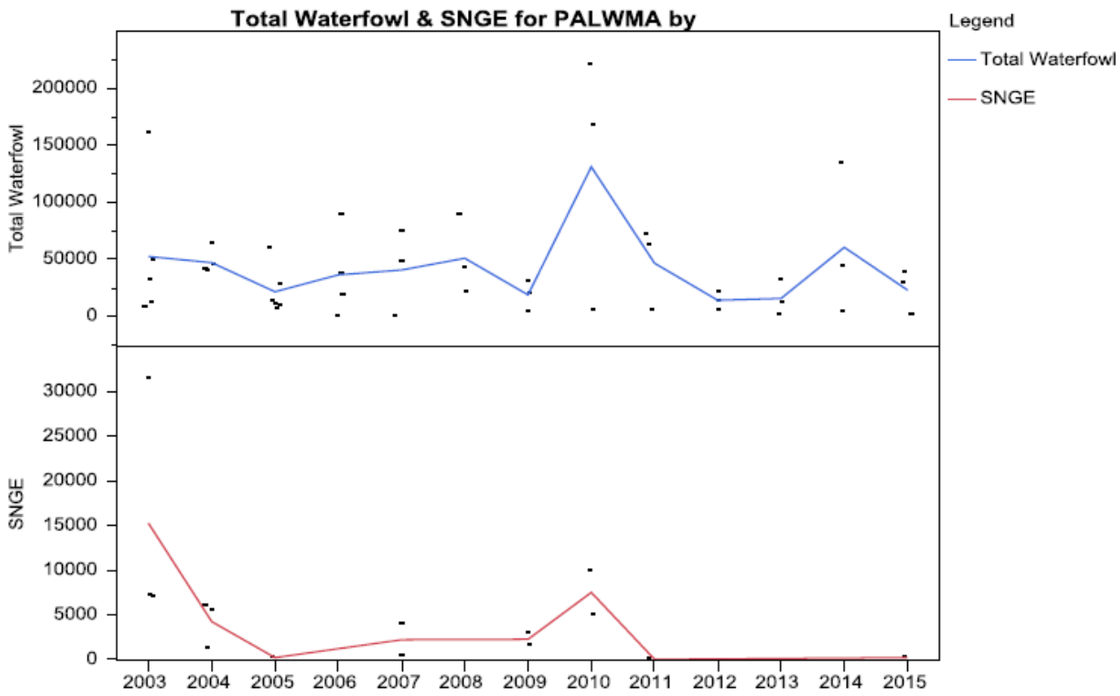
C. Todd Baker, has a brief slide show presentation explaining the rational

Todd Baker has worked in the costal refuges for the past 15 years.
There is a growing concern of mud boat usage at Pass-a-Loutre and the coastal WMA's.
The real concern is the engines are faster and cover a lot of property in a short amount of time.

The proposed NOI – Operation of mud boats and air cooled propulsion engines prohibited after 2:00pm September through January; Receiving public comments that are in support of

This suggestion comes from the public
Pass-a-Loutre was chosen because we implement this restriction and have minimal amount of impact on the public.
It's a prohibition for mud boats period so Enforcement can enforce.
Two basic user groups: Owners of Camps at Port Eads and Users of the campgrounds

Delta NWR - " Wintering waterfowl populations… peak in mid-December and January. Recent surveys document 30,000 to 50,000 snow geese and 80,000 to 150,000 ducks." Delta and Breton NWR Comprehensive Conservation Plan 2008



Vice Chairman Yakupzack called for questions

Q. Commissioner Manuel, Why 2:00pm and not noon?

A. Todd Baker, you have to fight the fog at the mouth of the river and you have to hunt the tides.

Q. Commissioner Hebert, Mud boats are load. Is it the noise that is disturbing the ducks?

A. Todd Baker, the problem with decibels is that to enforce a decibel regulation you have to hold a decibel meter within so many inches of the out fall and you can't do that on a moving boat or a half of a mile away. You have to have the meter adjacent to the muffler as it's making the noise. Its not practically enforceable.

Q. Commissioner Hebert, a quiet surface drive that is no more impactful than an out board motor – would it be beneficial to the ducks?

A. Todd Baker, Two fold – Noise and boats can haze where ducks go

Q. Commissioner Hebert, Are airboats allowed?

A. Todd Baker, no, they are not allowed

Q. Commissioner Courville, Have you looked at prohibiting aftermarket mufflers?

A. Todd Baker, yes, the problem is knowing the difference versus a replacement part. Enforcement cannot enforce a part of the engine

Q. Commissioner Courville, Are any commercial hunts allowed on WMA's?

A. Todd Baker, No, they are not allowed

XI. To hear an update on the Game and Fish Preserves' governing authorities
Tommy Tuma, Director Habitat Stewardship, Wildlife Division

Letters were sent to all the Game and Fish Preserves and notified them of the process and the authority RS 56:802 - The department shall have the duty and responsibility for the management of resources, including water level control, aquatic weed control, and maintenance and repair of dams, control structures, and spillways within the territorial jurisdiction of each commission established in R.S. 56:801, provided that no local commission or authority is providing these services. The individual game and fish preserves and commissions or local governing authorities shall have the duty and responsibility for maintaining all support services within their territorial jurisdiction, including parks, picnic areas, and concessions.

Proposed Waterfowl Hunting Regulations Summary - Construction of and/or hunting from permanent blinds on Game and Fish Preserves and Game and Fish Management Preserves, is prohibited unless otherwise specified. A permanent blind is any blind using non-natural materials or having a frame which is not dismantled within two hours after the end of legal shooting time each day. Blinds with frames of wood, plastic, metal poles, wire, mesh, webbing or other materials may be used but must be removed within two hours after the end of legal shooting time each day. Blinds made solely of natural vegetation and not held together by nails or other metallic fasteners may be left in place, but cannot be used to reserve hunting locations. Natural vegetation (including any material used as corner posts) is defined as natural branches that are 2 inches or less in diameter.

Unattended decoys are prohibited. Decoys must be removed daily

Corney Lake is owned by USDA-USFS and they implement a permitting system

Bayou Bonne Idee approves of the NOI

Black Bayou Lake has a commission established and will propose their own rules and regulations

Bundick Lake has a commission established and will propose their own rules and regulations

Spanish Lake has a commission established and will propose their own rules and regulations

Have contacted but not confirmed the following:

Beauregard Old River, Catahoula Lake, Cocodrie Lake, Hard Water State, Iatt Lake Lake Bistineau, Nantachie Lake, St Martin-Lafayette, Turkey Creek

Vice Chairman Yakupzack called for comments

Q. Commissioner Courville, The original act gave all Preserves the authority to form a Commission?

A. Tommy Tuma, WLF is the sole authority for setting rules and regulations; “they” can propose their own rules and regulations set forth by the Police Jury

Q. David Schneider St. Martinville, LA, - Game Preserves that have their own Commission and members – are those Commission members term limited?

A. Tommy Tuma, as the statute reads, I would say no

A. Commissioner Broussard, it would be established through the local governing body

XI.a. To elect a Chairman

Commissioner Broussard nominated Commissioner Bart Yakupzack

Commissioner Manuel seconded the motion by Commissioner Broussard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

XI.b. To elect a Vice Chairman

Commissioner Manuel nominated Commissioner Chad Courville

Commissioner Broussard seconded the motion by Commissioner Manuel

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

XII. Set June 2016 Meeting Date

Commissioner Broussard made a Motion of the date of June 2nd, 2016

Commissioner Manuel seconded the motion by Commissioner Broussard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

XIII. Receive Public Comments

There were none heard

XIV. Adjournment

MOTION by Commissioner Broussard

Commissioner Manuel seconded the motion made by Commissioner Broussard

Vice Chairman Yakupzack called for a vote and the Motion passed with no opposition

END